THE "SILENT ART" OF ANCIENT CHINA:

Historical Analysis of the Intellectual and Philosophical

Influences in the Earliest Medical Corpus Ling Shu Ching

by

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M.A., Harvard University, 1963

DISSERTATION

Submitted in partial satisfaction of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

HISTORY OF HEALTH SCIENCES

in the

GRADUATE DIVISION

(San Francisco)

of the

UNIVERSITY OF CALIFORNIA

Approved: Ilza Veith

Committee in Charge

Deposited in the Library, San Francisco Medical Center:

Date Librarian

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Degree Conferred:


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Doctoral Dissertation Abstract

THE "SILENT ART" OF ANCIENT CHINA

Historical analysis of the Intellectual and Philosophical influences in the Earliest Medical Corpus: Ling Shu Ching

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THE "SILENT ART" OF ANCIENT CHINA

Francis R. S. Lee

The "Silent Art" of ancient China is an historical analysis of the intellectual and philosophical influences in the earliest medical corpus: Ling Shu Ching (靈樞經). The second half of the Nei Ching (The Yellow Emperor's Manual of Corporeal Medicine). The dissertation consists of four parts:

I. The principal propositions as the basic problems which will be demonstrated;

II. Cultural postulates in ancient China as minor premise to support the cultural influences in ancient Chinese medicine;

III. The "Silent Art" of ancient China as a certain analysis of the earliest medical corpus: Ling Shu Ching with its dating and documentary problems, and the medical concepts in the corpus as evidenced in relevant translations from the original text; and

IV. The conclusion to disclose the inferences from the previous premises.

On the premises of the ancient Chinese medical corpus, the notion shows that the cultural postulates dominated the medical behavior. The essential notion in the ancient Chinese medical corpus is the "physiopathologic" inclination towards sick beings which conducts the Chinese medical tradition. This disseratation attempts to analyse carefully the therapeutic measures with systematic verification of three relevant translations from Chinese original text. The physiopathologic tendency further leads the dissertation to conclude the ancient Chinese medicine as "medical axiology".

"Axiology" is a philosophical term dealing with the nature of value and the types of value in metaphysics or religion. "Medical Axiology" is characteristically referring to the Chinese medical behavior in nature of its clinic judgment which should be the most distinguished feature apart from other medical traditions.

A rather curious chapter in the ancient Chinese medical corpus

deals with cancer. Although it consists of nothing in the sense of cell theory, the description of the chapter is certainly meaningful to the modern cancer research. This one chapter ends the relevant nine translations coinciding with a specific Sino-Mathematical notion, i.e., "nine" denotes the top number in the ancient China symbolizing the fulfillment of this dissertation.

Historically, since Chinese anatomic and physiologic concepts were not developed consistently, the causal principle of disease was treated merely philosophically. This was, however, due to the ideological controversies between the Confucian humanistic discipline and Taoist naturalistic tradition. For the philosophical origin of "Yin", "Yang", and "Five elements", has been expressed explicitly as simple the natural phenomena without mysterious notions behind the term and its meaning. The ancient Chinese, as agricultural people with thier awareness of natural crisis, transferred analogically their mental image from nature onto human body. The terminology of "Yin", "Yang", and "Five elements" was later transformed from the original connotation. Since language expression has been a barrier, a particular method has evolved from Rudolf Carnap's Meaning and Necessity in the dissertation in order to avoid the ambiguity of meaning.

"Silent art" was a classical usage designated for medicine by Virgil, the Roman poet. In the twelfth book of the Aeneid, medicine was characterized as "chosen knowledge of the power of herbs and ways of curing and to practice without glory the silent art". In his The Therapy of the Word in Classical Antiquity, Dr. Pedro Lain Entralgo expressed: "Medicine is called muta ars, 'the silent art'." Since this dissertation deals with ancient Chinese medicine, therefore it is named The "Silent Art" of Ancient China.

THE "SILENT ART" OF ANCIENT CHINA

Historical analysis of the Intellectual and Philosophical influences in the earliest Medical Corpus Ling Shu Ching

I. Principal propositions
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  - 2. Antiquity and Ancestry of Man
    - a. Social organizations and ideas
- B. The Cultural Nucleus
  - 1. Cultural concepts in ancient thought
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    - b. Philosophical reflection
- B. Ideological controversies
  - 1. Confucian ideology
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  - 2. Taoist tradition
    - a. Beginning of Physical science
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A. Ancient Medical Corpus

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a. Yin and Yang

b. Elements

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3. Physiology
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(translations from Ling Shu Ching)

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1. The "vital axis" doctrine

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1. Phase-value determinism

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b. Speculative phase - Magnitude value

c. Revival phase - Reactionary value

2. Chinese intellectualism

a. the "silent art"

Bibliography

I. Principal Propositions

The "Silent Art" of Ancient China is an historical analysis of the intellectual and philosophical influences in the earliest medical corpus Ling Shu Ching (靈樞經). This corpus is the second half of the Huang Ti Nei Ching (黃帝內經), The Yellow Emperor's Classic of Medicine, which is attributed to the legendary period of the Sage king, the Yellow Emperor.

The term "silent art" is borrowed from Pedro Lain Entralgo's discussion of medicine in his The Therapy of the Word in Classical Antiquity. He derived this poetic expression from the Aeneid, XII: "...chosen knowledge of the power of herbs and ways of curing and to practice without glory the silent art."[1]

The "Silent Art" of Ancient China consists of four main parts. Part I present principal propositions--subject matter or statements--which lead to assertions. Part II is concerned with cultural postulates as assumptions or bases for arguments constituting a large part of ancient Chinese medicine. Part III discusses mainly the ancient Chinese medical corpus as a consequence of the preceding propositions and cultural postulates. The final Part IV uses the Ling Shu Ching as a basis for a method explaining a three-phase development of Chinese medicine from the fourth century B.C., down to the present. Criteria are established to determine these phases, and the use of the

1. Entralgo, Pedro Lain, The Therapy of the Word in Classical Antiquity, ed., & tr., by L. J. Rather, Yale University Press, 1970, pp. xxi-xxii

criteria is called in this dissertation "medical axiology". "Axiology" is a philosophical term used in metaphysics and aesthetics to designate the nature and types of value.[2] "Medical axiology" is a method for understanding the development of Chinese medicine as caused by a transition of values occurring in three phases over a period of 24 centuries. It is asserted that this method can also be applied to understand the development of Western medicine.

In Part III nine selected chapters of the original text of the Ling Shu Ching are translated. Because it is impossible to provide a translation of the original text without, on many occasions, having to interpret rather broadly the essential meaning of the treatises, a paraphrased, rather than literal, rendition is supplied.

in his "Idea of a Universal History from a Cosmopolitan point of view", Immanuel Kant attempted to demonstrate human progress by means of a series of propositions illustrative of human nature through which he hoped to establish a universal history of the world based upon philosophical principles.[3] Although Kantian concern with moral idealism is not influential in this dissertation, his general scheme demonstrative of human nature has been adjusted to form a framework for Part I, "On principal propositions". A "proposition" is, by definition,

[2]. The detailed reference of this term can be found in the Webster International Dictionary, 3rd ed., 1961

[3]. This essay is reprinted in the translation by W. Hastie. (Theories of History, ed., by Patrick Gardiner, The Free Press, 1959, pp. 22-49).

a statement which makes an assertion by virtue of its truth or falsity.

Part I provides evidence from archaeological excavations and anthropological reconstructions to demonstrate that the Yellow River civilization derived from the transference of agricultural concepts of the geographical environment into human nature and response. To demonstrate some propositions and the related historical progress, the histories of the Shang, and the Chou are examined, continuing into the period of the Warring States (c. 1520-221 B.C.)

Part II supplements and supports the historical findings of Part I by introducing other cultural developments to help prove the validity of Part I's propositions. Assuming that "medicine" is an effect of cultural concepts, then cultural postulates should precede any hypothetical supposition regarding the nature of the medical concepts formed in the ancient Chinese medical corpus. Thus, Part III describes how the Ling Shu Ching, the ancient medical corpus of China, conforms with medical concepts before the fourth century B.C. in order to gain insight into the main developments of historical progress. The interpretation of historical progress in Part III conclusively shows how fallacious it is to adopt exclusively the viewpoint of the natural sciences. The interpretation of historical progress raises a number of points of considerable

importance concerning the extended implications of notions such as understanding and explanation in order to appreciate how history may enlighten philosophical progress as a whole. Kant obviously would be in the mainstream of this view as a philosopher-historian. His historical approach is, in important respects, unlike that of other self-confident historial metaphysicians and is applied with great caution and qualifications. Consequently it contains sufficient merit to warrant considerable modification being applied in examining any subject which touches upon the borderline between belief and actuality--such as this examination of ancient medical documents and their cultural roots.

The Yellow Emperor's Classic of Medicine was first systematically introduced into English by Wang Chi-min and Wu Lien-te. In their History of Chinese Medicine, published in 1932, the authors devoted a chapter to the Nei Ching or the Canon of Medicine.[4] As a whole, the book is comparatively more historical, documentary, and indigenous than previous writings, such as W. Hamilton Jeffery's The Diseases of China (1910) which discussed hygienic habits and the racial peculiarities of the Chinese people, or Eugene Vincent's La Médecine en Chine which described the medical scene in the China of the early part of the twentieth century.[5] It cannot be disputed that during the early twentieth century

4. Wang, Chi-min & Wu, Liente, History of Chinese Medicine, The Tientsin Press, China, 1932, pp. 17-23.

5. Jeffery, W. Hamilton, The Diseases of China, P. Blakiston's Son & Co., Philadelphia, 1910, Vincent, Eugene, La Médecine en Chine, au XX^{e} siecle, G. Steinheil, Paris, 1915.

foreign physicians, because of a language barrier, were able only to provide preliminary works. Even Harold Blake, Dean of the School of Medicine at Shan-tung Christian University, Tsi-nan, China, did little more than study medical missionary development in his book entitled China and Modern Medicine (1921).[6] Previous to Wang and Wu's History of Chinese Medicine none of the medical writers concerned themselves with the earliest medical corpus, the Ling Shu-ching.

However, according to The Diseases of China, Chinese Medicine was semi-scientific and constituted a certainly dignified, empirical practice which dated back hundreds of years. In his chapter "The Old Empirical Practice" Jefferys provided a very simple survey of Chinese ideas on anatomy and Chinese drugs, but gave no discussion of the historical origins or theoretical basis of the system. In La Médecine en Chine, Vincent mentioned the complementary concepts to the pathogenetic and semilogical theories of Chinese medicine and the survey of Chinese medicine--characterized by therapeutic generalities. However, his concepts and surveys were probably superficial and lacking in historical depth as to their origin. Blake's China and Modern Medicine, published half a century ago, is of course no longer "modern". It is in fact a somewhat old-fashioned document expressing the view of a medical missionary in China.

6. Blake, Harold, China and Modern Medicine, United Council for Missionary Education, London, 1921.

In their History of Chinese Medicine, Wang and Wu cite many historical documents which discuss ancient medicine. Regarding the Huang Ti Nei Ching, the authors comment:

> Upon it is built most of the medical literature of China, and so important is it considered by the profession that even at the present time, three thousand years after it was written, it is still regarded as the highest authority. The work consists of two distinct books. The first is called Su Wen or Plain Questions and the second Ling Shu or Mystical Gate. Nothing definite is known of the author or the date of its publication. Tradition ascribed it to Huang Ti 2698-2598 B.C., which, however, is not based on historical evidence.[7]

Furthermore, the authors state that:

> throughout the Nei Ching very little is mentioned about therapeutic measures excepting acupuncture which was the accepted method of treatment. Indeed, the Ling Shu is more or less a special treatise on this art. Most of the contents are devoted to tis technique, indications, prognosis and results. Other forms of treatment described are venesection, cauterisation, decoctions and massage. But only the general principles are laid down, no specific directions being given. In diagnosis and prognosis all manner of sophisticated subtlies are dealt with. The physical temperament, general condition, state of mind, influence of the atmosphere, time of year or day, constellation, locality, colour of skin and other objective signs are taken into consideration. But the most important of all is the pulse which is believed to be able to indicate the nature and location of every kind of disease.[8]

Indeed, the History of Chinese Medicine gathered much material from original Chinese documents and translated many Chinese terms into English. In the general history of Chinese medicine, the work should be regarded as a pioneer. However,

7. Wang and Wu, History of Chinese Medicine, p. 17.

8. Wang and Wu, History of Chinese Medicine, pp. 22-23.

the description of the Ling Shu Ching in the History of Chinese Medicine is important for this dissertation, because Wang and Wu's presentation of the content of the Ling Shu Ching will be challenged.

It was eight years after the History of Chinese Medicine was published that Edward H. Hume published his The Chinese Way in Medicine (1940). This book discusses more fully philosophical concepts, such as the nature of the universe and man as seen in Chinese medicine, and also given an account of the founders and chief examplars of Chinese medicine. It presents a more cohesive interpretation of the progress of Chinese medicine. Unfortunately, Hume's work provided only short and inadequate summaries. Many of the important points needed to be explored more fully and in greater depth.

In 1949, Ilza Veith translated the first 34 chapters of Huang Ti Nei Ching Su Wen (The Yellow Emperor's Classic of Internal Medicine) with textual analysis.[9] It discusses the philosophical foundations of the earliest medical corpus of ancient China, and is the first study based upon the original text of Chinese medicine. As Far Eastern thought and its history have become increasingly more important to Western scholars, The Yellow Emperor's Classic of Internal Medicine transcends the confines of Chinese medical history and has come to be

9. Veith, Ilza, The Yellow Emperor's Classic of Internal Medicine, University of California Press, 1966.

recognized as an important part of general medical history.

While Veith's book is more concerned with the Su Wen, or first half of the Huang Ti Nei Ching, Manfred Porkert's The Theoretical Foundations of Chinese Medicine (1974) combines knowledge of modern medicine with an extremely sound grasp of philology and scientific interpretations of the original materials from both the Su Wen and the Ling Shu. It is apparent that his systems of correspondence depend more on the Ling Shu than the Su Wen. The Ling Shu Ching, Book 3, provides the basic materials for his exploration of the microcosmic dimensions of Chinese thought.[10] Certain parts of Porkert's terminology are semantically ambiguous, although his descriptions of terminology are most helpful.

Joseph Needham should be mentioned, because of his important contributions to the study of Chinese medicine. Many of his articles are collected in the Clerks and Craftsmen in Chin and West (1970).[11] At the 1966 symposium on "Medicine and Culture", organized by the Wellcome Historical Medical Museum and the Wenner-Gren Foundation, and focusing on the topic of "Medicine and Chinese Culture", Needham mentioned the ancient medical corpus Huang Ti Nei Ching. But his discussion of the work is limited.[12]

[10]. Porkert, Manfred, The Theoretical Foundations of Chinese Medicine, M.I.T. Press (East Asian Science Series vol. III), 1974. Porkert's only interest is his systems of correspondence, namely the illustrations of acupuncture points and their system.

[11]. Needham, Joseph, Clerks and Craftsmen in China and the West, The Cambridge University Press, 1970.

[12]. ibid., pp. 263-293.

Wang and Wu's approach to the History of Chinese Medicine simply follows a description of events amounting to little more than a historical chronicle unconcerned with ideas leading towards a history of man. Veith's The Yellow Emperor's Classic of Internal Medicine is based on original documents which serve to elucidate and explain the nature of medical knowledge in Chinese history, and it provides a good foundation for later research in this inadequately explored subject. The Theoretical Foundations of Chinese Medicine of Porkert, as he himself admits in his "Introduction", is philological in method, with greater stress on semantics and etymology than on historical analysis. This may cause some confusion among those who fail to appreciate his aim. However, Porkert clearly describes the systems of correspondence which exist in Chinese medicine and those concepts of magnitude called "standards of value".

"Medicine and Chinese Culture" is one o_ many general and particular articles by Needham on the history of science and technology in ancient China, but one of the very few on medicine. Needham bases his works mostly on cultural factors to discuss historical phenomena. For example, in this article he views medicine as part of traditional Chinese society and religion in the totality of Chinese culture, and includes both Chinese-traditional and modern-Western medicine. Needham, in his monumental work on the Science and Civilization in China,

characterizes his special viewpoint of "culture".[13] Needham's view of "culture" is perhaps too broad a term to use, however, since "culture" possesses many meanings depending upon differing contexts.

In this present dissertation, "culture" is used in a restricted sense to characterize the thought of those who would project on the little world of man the idea that the macrocoms influences the microcosm, to borrow an expression from the image of the Renaissance. This methodology could answer the basic scientific questions as the "what", "when", and "how", as well as the metaphysical "why", which are all essential aspects of Chinese medicine.

Wang and Wu in their History of Chinese Medicine express "what Chinese medicine is; Veith treats the Su Wen historically and partly answers "how" and "when" the earliest medical corpus came into existence. Porkert constitutes his systems of correspondence as a method to describe the acupuncture systems in Chinese medicine. But serious reasoning on the "how" of Chinese medicine and its intellectual insight on the "why" in Chinese speculation still remain to be explored.

The objective here is to examine the questions "how" or "why", not only to seek a deeper understanding of Chinese medicine, but to establish the significance of speculation in its development and the numerous parallels which exist in the evolution of Western medicine.

13. Joseph Needham's Science and Civilization in China is originally planned to write 7 volumes. Volume 1 was printed by the Cambridge Press in 1954 and volume 5 (Part II) was printed in 1974. In the author's notes, in Volume 5 (Part II), Needham explained that Volume 5 (Part I) is dropped.

A. Prehistoric culture

The first propostion in this dissertation begins with the geological and biological data on ancient China in order to understand the physical environment.

In a manner similar to the river cultures of the Old Worlds, Chinese civilization first appeared along the banks of the Yellow River. The basin of the Yellow River was the cradle of the earliest Chinese civilization.[14] All sources of information on the people on the Yellow River plain have been greatly augmented during the early part of the twentieth century by the discoveries of archaeologists and anthropologists.[15]

The most important discovery was made in 1922 by J.G. Andersson of the existence of the "Yan-Shao culture" which arose along a belt extending from the west to east on the

14. According to Cheng Te-k'un's Prehistoric China (Archaeology in China, Cambridge, 1959), the basin of the Yellow River is lying just south of the great steppe and desert zone of the Gobi, it is drained by one of the largest rivers of East Asia which rises in the eastern part of Ching-hai (青海)at an altitude of about 14,000 feet above sea level. It flows in a north-eastly direction, till deflected due east by the Yin-shan Range (陰山山脈). Topographically the basin may be divided into two spheres, the upper loess highland in the west and lower flood plain in the east, each with some unique features which have been brought about by the same natural agencies.

15. Glyn Daniel of St. John's College, Cambridge University, said in 1958: "From the point of view of the western world, the modern study of ancient China may be said to have begun in 1927, when at Chou-k'ou-tien, Peking Man was found, Chinese prehistory is thus only thirty years old." The discoveries of prehistoric culture in China may refer to J. G. Andersson's Children of the Yellow Earth (1934) and H. G. Greel's The Birth of China (1937)

banks of the Yellow River. Andersson took the contents of the site to represent a highly distinctive state of the Neolithic Age.[16] Joseph Needham says of the "Yang-shao culture":

> The most outstanding characteristic of the Yang-shao people was their painted pottery which bears magnificent designs in a variety of colour and belongs to the finest type of Neolithic ceramics.[17]

The painted pottery belong to a well-established agricultural community, and no migratory nomads seem to have carried any similar type of decorated pottery on the backs of their animals. The "Yang-shao culture" appears to prove that Chinese people unlike other river folks, were not survivals of nomads who happened to dwell near the river. This conclusion might justify the assumption that the Chinese were racially or culturally related to their ancient contemporaries such as those of Egypt, Persia,and India. However, anthropological studies further contradict the idea that China possessed any racial connections with these peoples.[18]

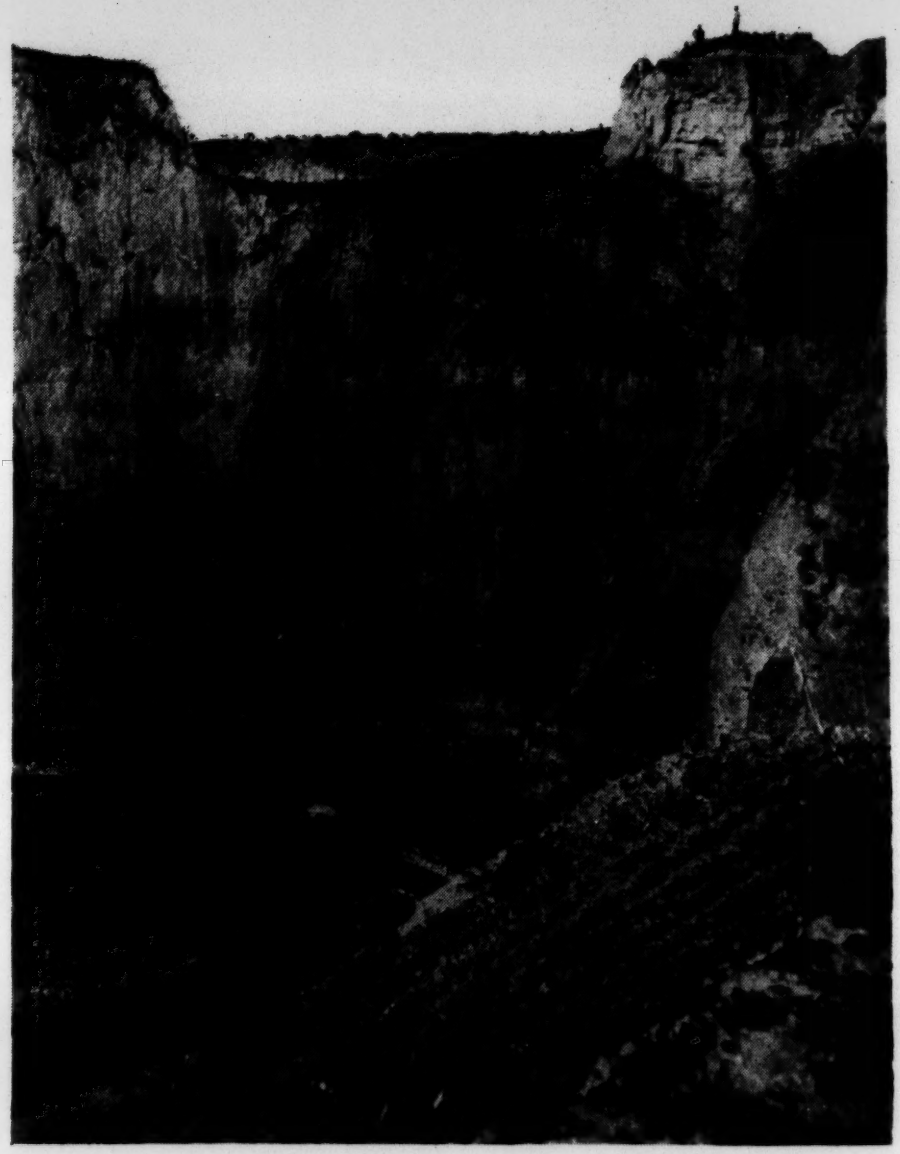
From geological evidence, the presence of humans in China can be established for the prehistoric period. It was J. G. Andersson who first investigated the so-called "dragon bones" fossils of Chou-k'ou-tien (a region where fossils were gathered and supplied to the pharmaceutical shops for use in medical

16. This term was used by Andersson in 1922 when he discovered the first prehistoric site at Yang-shao (仰韶), Ho-nan province (河南省), China.

17. Needham, Science and Civilization in China, vol. 1, p.81

18. ibid., p. 38

Pottery of the Yang-shao culture. 1. *Kuan*-jar, with painted animal designs, red ware; Hsin-tien, Kansu. 2. *Kuan*-jar, with painted geometric designs, red ware; Hsin-tien, Kansu. 3. *Li*-tripod, with painted geometric designs, red ware; Ssŭ-wa, Kansu



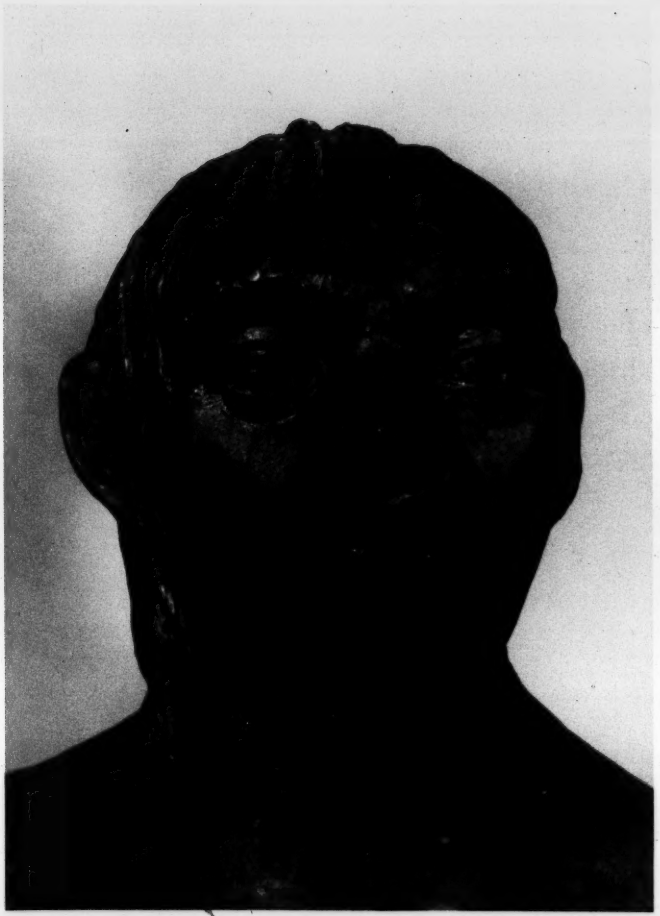
Landscape of the loess ravine at Yang-shao-ts'un, Honan

preparations against all sorts of diseases).[19] This discovery promoted the cooperative project of the Chinese geological survey in which the Peking Union Medical College undertook the study of the fossils and reported them to contain human remains of the greatest significance later known as Sinanthropus Pekinensis. Several sets of human skeletons were unearthed and because of their physical type, closely similar to that of the modern northern Chinese, the prehistoric people of the Yellow River region are regarded as the proto-Chinese.[20]

The physical development of Sinanthropus deserved a closer investigation than a mere description of the characteristic features. Cheng Te-k'un, a Cambridge scholar of Chinese archaeology, found that Sinanthropus lived in natural caves and presumably in groups as a "family". Unlike

19. Gordon, Benjamin J., Medicine Throughout Antiquity, F. A. Davis Company, 1935, p. 44 "In Modern China 'dragon bones' as fossils are called, have a highly commercial value. When powdered, and solved in acid, and mixed with a liberal quantity of superstition, they are considered highly efficacious remedies in almost every kind of disease, from malaria to compound fracture of the leg."

20. The most outstanding excavation reveals that it was an ancient village which was occupied continuously for a long time. Though some differences in the architectural remains have been noticed in the lower and in the upper levels, the basic elements remain the same throughout the deposit. In the settlement, the buildings and tombs were arranged in such a way as to suggest that the agricultural community enjoyed a stable form of economic and social life. This shows that the ancient village must have been used as a settlement for a long time. Several sets of human skeletons have been unearthed and studied, especially by Davidson Black, and because of their physical type is closely similar to that of modern northern Chinese, the Neolithic people in this region may be regarded as the proto-Chinese.



Portrait of Sinanthropus Pekinensis from Chou-k'ou-tien

(Dr. J. B. DeC. M. Saunders' private collection)

Landscape of Chou-k'ou-tien, near Peking

among all other Lower Palaeolithic people in the typical conditions of a northern permanent climate, there were extensive traces of the use of fire in the Sinanthropus settlement.[21] Fire was indeed the outstanding and the most surprising discovery during the prehistoric civilization. From the discovery of thick layers of grain-husks in the caves, it is possible that the Sinanthropus lived on a vegetable diet.

Relying upon the geological data, archaeological excavation, and anthropological reconstruction, I advance the proposition that China was an isolated country which sprang from the region of the Yellow River, geographically set apart from other ancient contemporary cultures, and independently developed its own culture on the loess highland of the Yellow River plain. Owing to the condition of the river plain and the pattern of climate, the proto-Chinese characteristically developed a peculiar view of their mental-spiritual nature which was rather different from that of other contemporary cultures. The "family" structure, "fire" discovery, and vegetable diet are typical of the evidence demonstrating that the proto-Chinese either did not follow an evolutionary path comparable to similar groups at approximately the same period nor did they achieve an agrarian existence more rapidly than most in the battle with

21. Cheng, Prehistoric China, p. 17

the environment of the prehistoric time.

As to the second proposition, the prehistoric culture in the Yellow River basin may be regarded as the beginning of Chinese culture. Shang China may be said to constitute the formative period when many of the characteristic elements of culture took shape. Although Shang China was traditionally supposed to be well documented in ancient Chinese literature, nevertheless the ancient history of the Chinese began with myth and legends. The best-known legends were those of the Sage-Kings. Fu-hsi was said to have been the founder of the government and the originator of social institutions and cultural inventions. The Sage-King Shen-nung is said to have invented agricultural implements and discovered the medical properties of herbs and cured people of all sorts of diseases. Huang-ti, better known in the West as the Yellow Emperor, is reputed to have been the great promoter of culture who regulated the sacrifices and religious ceremonies, opened up the mysteries of astronomy and natural science, and invented the calendar. His queen is presumed to have invented sericulture, and the people began to use silk garments. It was the Yellow Emperor who reared the people from barbarism by introducing matrimony and many other cultural institutions and was honored as the earliest ancestor of the Chinese race. Critical studies in recent years have introduced many conclusive reasons for doubting

the legends. However, the ancient legends cannot be considered as wholly fictitious, though much of our knowledge of the Shang people is mythological in origin and largely a legendary tradition. This is to say, that all ancient culture arose from humble beginnings, and undoubtedly the well-documented Shang people, like other peoples, was a complex mixture of the primitive and the advanced.

The fundamental stratum on which Shang culture was deeply rooted was in the prehistoric past, therefore the beginning of the Shang may safely be placed in the prehistoric period shortly after 2500 B.C. To the archaeologists, the Shang dynasty rose out of Neolithic villages in the Yellow River basin. The cultural level of the proto-Shang population was perhaps no higher than that of any of the other prehistoric groups in the region. The Shang people may have organized activities exploiting its importance and building ancestral temples as symbols of their power. They may have made themselves rulers of the center with their headman as the king. In some such fashion the Shang dynasty may well have had its beginning and the Shang King became the supreme ruler of the entire lower Yellow River plain.

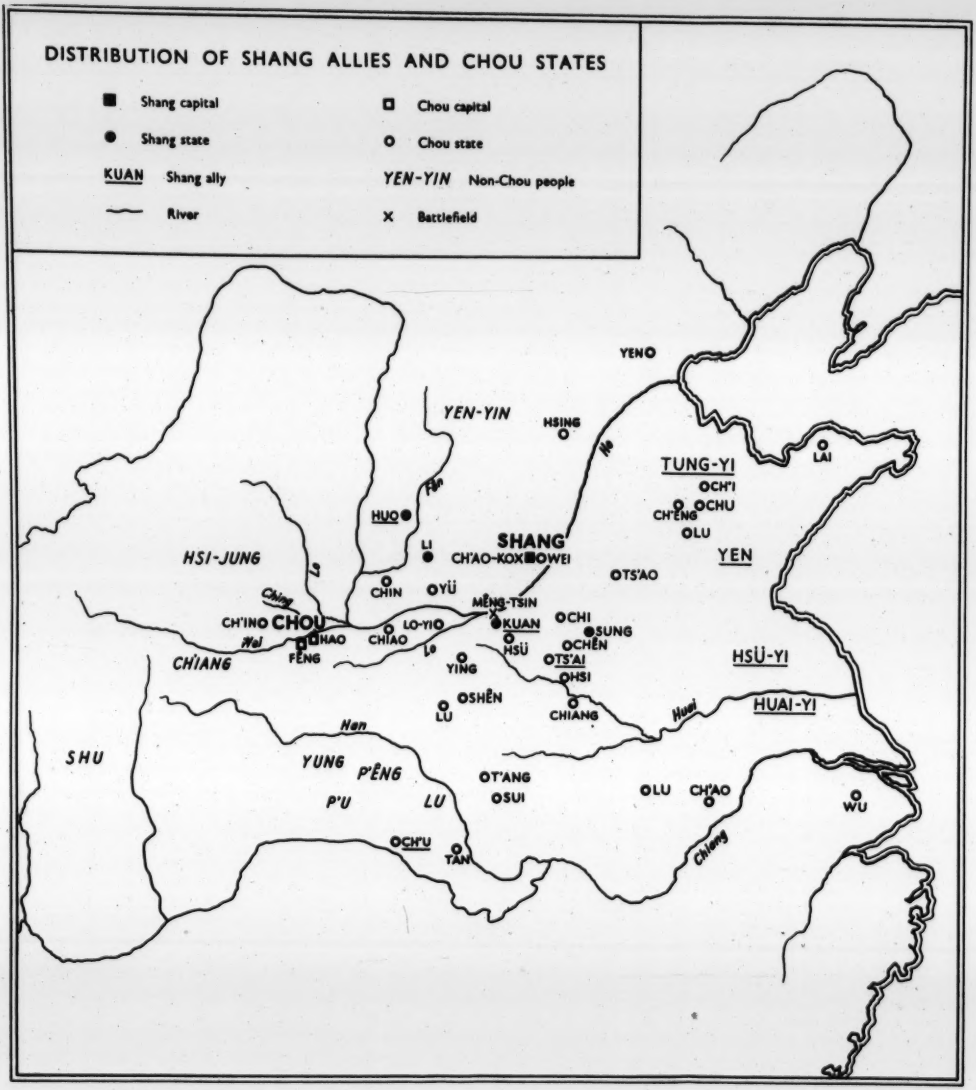
Data about the family organization of the common people of the Shang period are lacking, but since their life was simple, it may be presumed that there was little organization.

The Shang family is sometimes referred to as a clan, a term which seems to fit best our knowledge of these people. The organization of these clans or families were closely related to the institution of ancestral worship. The Shang ancestral worship seems to have arisen from the family organization, for the relation between the worshippers and the worshipped was more a family affair than a religious institution. Ancestral worship was thus destined to overshadow any religious practices which might have been introduced into the Chinese way of life and constituted the social foundation for the healing art without undue mythological influences or other cultural traditions.[22] Even very recent archaeological excavations, unearthed by the People's Republic of China, prove nothing beyond my argument that Chinese culture is independent.

B. The Cultural nucleus

As to the third proposition: the religious belief of the Shang people was based on a philosophical structure that the universe was composed of three levels; the heavens above, the earth beneath, and the human world in between. This was probably the beginning of Chinese philosophy in which an attempt was made to unite the three spheres into one. The center of the universe was man. Thus, the entire universe including the heaven and earth existed for man. The natural

22. Cheng, Te-k'un, Shang China (Archaeology in China, vol. Two), Cambridge, 1960, pp. 247-248.


DISTRIBUTION OF SHANG ALLIES AND CHOU STATES
Shang capital
Shang state
KUAN Shang ally
River
Chou capital
Chou state
YEN-YIN Non-Chou people
Battlefield
YENO
YEN-YIN
HSING
He
TUNG-YI
LAI
CH'I
CHU
CH'ENG
LU
HUO
Fen
LI
SHANG
CH'AO-KO
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CH'INO
CHOU
HAO
FÊNG
LO-YIO
CHIAO
KUAN
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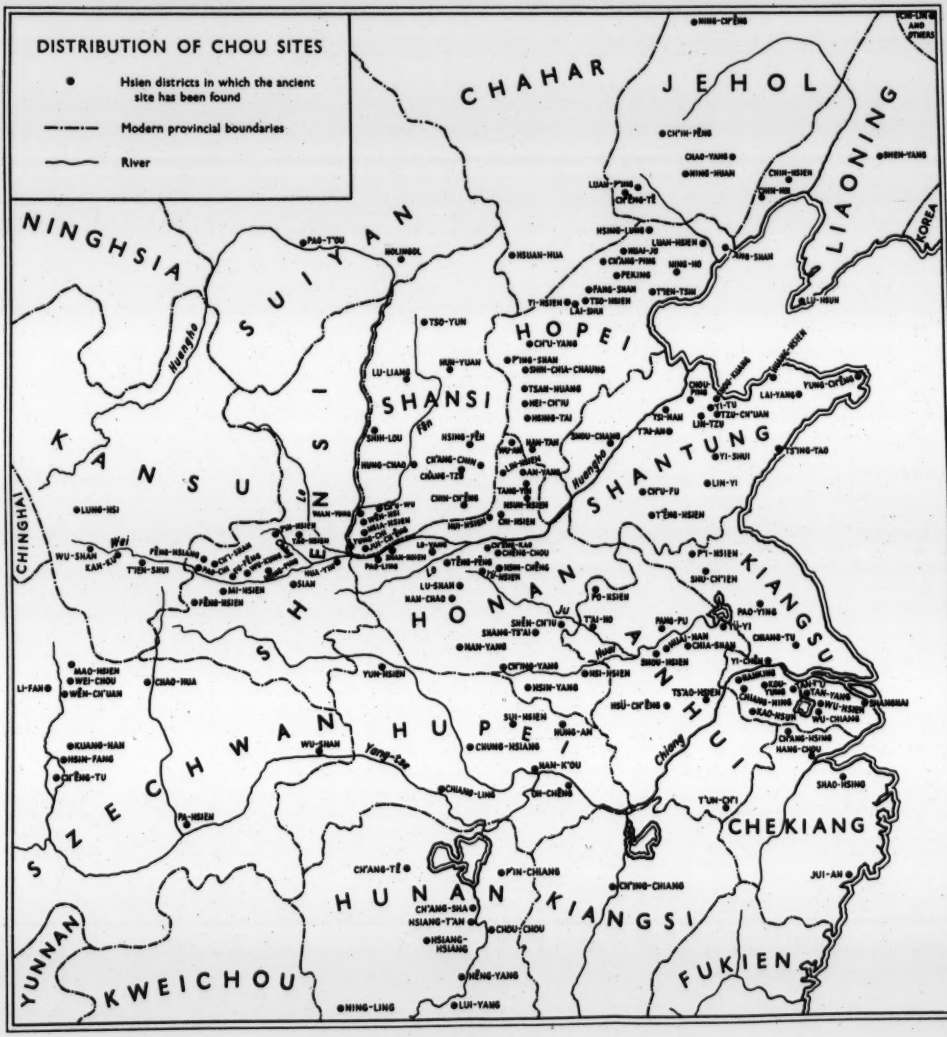
SUI
LU
CH'AO
WU
CH'U
TAN
Chiang


DISTRIBUTION OF CHOU SITES
Hsien districts in which the ancient site has been found
Modern provincial boundaries
River
CHAHAR
JEHOL
LIAONING
NINGHSIA
SUIYAN
KANSU
SHENSI
HOPEI
SHANSI
SHANTUNG
HONAN
KIANGSU
ANHUI
SZECHWAN
HUPEI
HUNAN
KIANGSI
CHEKIANG
FUKIEN
YUNNAN
KWEICHOU
CHINGHAI
KOREA
Huangho
Wei
Lo
Ju
Han
Yang-tze
Chiang

beings or powers were but tools of man, and they could be persuaded to do anything for human welfare or through the personal persuasion of ancestors. This was the pragmatic philosophy on which the Chinese way of life was founded, and it has continued to be one of the strongest currents in the stream of the Chinese civilization and culture.

In Chinese chronology, the Chou people made an expedition against the Shang dynasty in 1111 B.C. The Chou people followed the typical Shang culture until the fall of the central power at the end of the Western Chou (1111-771 B.C.). However, political and social changes took place during the Eastern Chou, the so-called Ch'un-chiu period (770-481 B.C.). The intellectual difference between the Western and the Eastern Chou was evident. In religion and in philosophy, Western Chou hardly added anything to the Shang tradition. However, in the Eastern Chou, the individual began to rebel against the ancient forms of worship and belief. Changes were taking place which gave a serious blow to religion and mythology. The philosophers were more concerned with the establishment of a new social and political order than in speculation about the unseen world. Confucius (557-479 B.C.) was well-known for his attitude, disparaging ancient beliefs.

"The concept of Nature" seems to be a fair summary of

Confucius and his doctrine. In this article, Mitukuni Yosida said:

> The thought of Confucius himself was humanistic, in the sense that he felt the problem of the good life was ethical and could be solved only by the improvement of human society. He talked about Heaven and the Celestial Way, but his was not the sort of Heaven that could serve as the original principle of the universe, like that of Lao-tzu and Lieh-tzu. The universe was practically perceived only through its influence upon man; its transcendental nature was not denied but was beside the point.[23]

Confucius' doctrine was primarily directed towards moral and social affairs; it was utterly lacking in the abstract and imaginative notions necessary for scientific accomplishment. Confucius was essentially a statesman and a reformer. It was only after bitter opposition had defeated his opportunity for constructive reform that he resolved to dedicate his life to education. He trained a group of disciples in his philosophy, and Confucianism became an orthodox ideology in China.

The age of Confucius was an age of political disintegration, social unrest, intellectual confusion, and moral disorder. It was quite natural that Confucius gave attention to social reform. However, his contemporary Lao-tzu considered that all mental comprehensions were relative in nature and equated the undifferentiated chaos with the Tao 道, the absolute way. The Taoist attitude initiated

23. Sivin, Nathan & Nakayama, Shigeru, ed., Chinese Science, M.I.T. Press (East Asian Science Series, vol II), p. 80

the great passage to research into natural phenomena.

As to the fourth proposition, in the period of the Warring States (Chan kuo: 481-221 B.C.), sinologists like to quote the well-known verse "all flowers bloomed and a hundred schools of thought contended" and to explore the fundamental structure of the universe such as the two forces (the Yin 陰 and the Yang 陽), and the elements of nature (metal, wood, water, fire, and earth). Since there were no reliable documents to prove the precise date of the dawn of speculation on the fundamental structure of the universe, historians can only theorize about it. At least divination by oracles was well practised in the period of the Shang. Thus, the two forces yin and yang could not possibly be a fresh notion developed in the age of the Warring States. It may be true, that during the latter period, the concept was more definitely formulated or systemized into a particular doctrine. As Needham says in his Science and Civilization in China, Tsou Yen may have been the first to establish the Yin-Yang school.[24]

It is here maintained that the Chinese Classic I-Ching (易經 The Book of Changes) developed prior to both Confucius and Lao-tzu. The Book of Changes fully considers the concept of the yin and yang, and even that of the five elements. This source might be open to debate on the question of the authenticity of the Chinese Classics following the serious

24. Needham, Joseph, "Medicine and Chinese Culture", Clerks and Craftsmen in China and the West, Cambridge, 1970, p. 267

event, the "Burning of the Books" in 213 B.C.[25] Nevertheless Hu Shih in his work The Development of the Logical Method in Ancient China demonstrates how Confucius found a symbolic representation in the complexities of change in the universe. Lao-tzu believed that change was a continuous process from the simple and small to the complex and great within comprehension and control.[26] Hu's elaboration is of considerable significance to this proposition, because it is not restricted to the cognitive problem over human existence in the cosmos, but would lead to the metaphysical structure of the world; namely to the characteristic notion of the anthropocentric microcosm within the macrocosm of ancient Chinese thought.[27]

As a long tradition descending from the Shang period human beings were not only located between heaven and earth, but were in correspondence with the natural order, specifically, as celestial revelations were interpreted for the assessment of human conduct. The usage of "anthropocentric microcosm" does not quite coincide with the idea of the World-Soul as Plato states in the Timaeus. It is a parallel notion which just happened in the "country of flowers". Incidentally, the notion is somewhat similar to what is commonly called the "astrobiological notion".

25. cf. Cheng, Te-k'un, Chou China (Archaeology in China vol. Three), Cambridge, 1963, p. xx

26. Hu, Shih, The Development of the Logical Method in Ancient China, The Oriental Book Co., Shanghai, 1922, p. 32

27. cf. Allers, Rudolf, "Microcosmus", Tradition, vol. II, Cosmopolitan Science and Art Service, New York, 1944, pp. 351-367

The ancient Chinese contemplated and made correlations between the cosmos and human physical substance. It was a great adventure in the growth of the mental faculties as well as of communicative symbols evolving from pictographic symbols to ideographic symbols, or from existing inscribed symbols to the metaphorical. By observations on natural phenomena and topological configuration, the ancient Chinese reduced natural phenomena into correspondences with the human organism. In the Shang period, the surface of the earth was thought to be flat and divided into thre concentric squares. The theory of the square became the law of nature, and the concept was applied to different domains, material as well as spiritual. The theory held that the flesh corresponded to the texture of the flat earth. The ears and eyes corresponded to the sun and moon positioned in the heavens; and the five internal organs were related to the five elements which were materials in constant use. Under the notion of a square, the four limbs corresponded to the four seasons. The human body was also said to consist of 365 bones which corresponded to the number of days in the year by the solar calendar. China had twelve rivers, hence the human body was thought to have twelve major vessels. The rivers eventually enter the ocean; so the junctions are called "reservoirs" just as the heart is

called the blood reservoir (血海). Man was a microcosm in which all the contents of the macrocosm are reflected. Correspondence of the microcosm within the macrocosm belongs to a long continuous tradition which constitutes the most essential concept and notion underlying almost every aspect of Chinese medicine.

II. Cultural Postulates in Ancient China

In the principal propositions, the cultural nuclei were settled as the premises for the consequent inferences of cultural postulates in ancient China which demonstrate the pattern of the intellectuality and philosophy involved in an appreciation of the earliest medical corpus. This dissertation is primarily concentrated on the Ling Shu Ching or the secon part of the Huang Ti Nei Ching (The Yellow Emperor's Classic of Medicine).

A. Organism and Human Normality

The geological data and the topography supplies the information on the physical environment in ancient China. The human adjustment to that physical environment provides further comprehension of the beginning of Chinese culture. These dominant physical factors influence the formation cultural nuclei in ancient China. By the cultural nucleus is meant a body of primitive concepts of natural phenomena and their interpretation. However, the interpretation demands further exploration in order to establish the underlying postulates.

In the principal propositions, the concept of a microcosm within the macrocosm has been elaborated indicating the primitiveness of the notions about the human organism possessed by ancient China. For the agricultural people who

dwelt at the band of the Yellow River basin, any sort of natural force would produce a strong impression in an otherwise normal life. Such forces as changes as weather conditions would be recognized instantly as an abnormal disturbance in daily life. Under the general conditions of the microcosm existing within macrocosm, illnes or physical discomfort could readily be interpreted as resulting from some similar principle. This is to say, the ancient Chinese rationally viewed their organic discomfort as being the consequence of some natural occurrence. This is clear evidence that the concept of yin and yang and the five elements which has dominated as the causal principle of disease for 2500 years of Chinese history, is involved in this concept.

The Shang dynasty flourished between 1520-1030 B.C. The most ancient source providing information on the recognition of disease in historical time depends upon the orcular archives. In the oracle records, there were 36 pieces of bone engraved with the names of disease among 16,000. The signs and symptoms of disease were mostly concerned with occurrences of skin, ear, eye, nose, teeth, and foot problems. No detailed material can be used for further research on the history of disease during the Shang dynasty. The external evidence may be analyzed from their oracular practice of the

Shang period may give some leads to the nature of the disease process itself.

Regarding the oracle practices during the Shang period, Needham noticed that:

> Classification has been made of the questions asked; among the most important were: (a) to what spirit should certain sacrifices be made; (b) travel directions, where to stop and how long; (c) hunting and fishing; (d) the harvest; (e) weather; (f) illness and recovery,....[28]

Needham's classification of the oracle practices provide many clues to the social setting during the Shang dynasty which is helpful to understand their views on the causal principles of disease.

Needham's classification, and interrelated factors, reveal that the Shang society was in transition from a primitive to an agrarian society. The question "to what spirit should certain sacrifices be made" indicates that the Shang society may not have passed completely through a pastoral period. In an agricultural society, "weather" and "harvest" are of primary concern. However, "hunting and fishing" are an inheritance from a primitive age when these were not only necessary for survival, but are inevitably correlated with the "travelling direction", as well as with the making of sacrifice to certain deities.

From the Shang period's oracle practice, it would seem

[28]. Needham, Science and Civilization in China, vol. 1, Cambridge, 1954, p. 84

that the Shang people did not understand disease brought by external forces. Nor could they grasp the idea of disease coming without visible cause. From the question "illness and recovery" in oracular divination, the people of that period may not have known the art of healing, and there is no evidence to show the presence of medical practice. The people of the Shang period, like the early paleolithic people, probably understood physical measures, such as rubbing, scratching, soaking the swollen areas, pressing on painful parts, blowing upon inflamed regions, and moistening wounds with saliva if no other liquid was available. Later, as knowledge and experience increased, doubtless the helping hand extended to fellow beings, established the basis for the acceptance and recognition of a healer.

In the oracle records, the solstices were known and with these as departure points, a year was readily divided into two halves, thur furnishing a convenient if simple basis for the practice of agriculture. Such knowledge undoubtedly gradually acquired through the observation of nature, assisted the Shang in their activities in the field. The most important achievement of the Shang period was the construction and use of the calendar which shows how well they employed the knowledge of the heavens acquired to improve their farming.

The period in which the "kan-chih 干支" system was introduced to China remains unknown. However, the system was already in regular use during the Shang period for keeping the days, months, and years. The Shang calendar laid the foundation for Chinese calendars of later periods. Greater clarification is certainly needed on both the system of determining the length and divisions of a year, as well as on the precise period at which each modification was introduced. It also played an extremely important role in Chinese medicine. Porkert said in his The Theoretical Foundations of Chinese Medicine:

> It is axiomatic in Chinese thought that all realms of nature--the macrocosm and all microcosms--are interconnected inductively. The energetic processes of the Cosmos unceasingly modulate the changes that take place in every individual organism.[29]

This aspect of the calendar will be elaborated with further details in the chapter on the causal principles of disease and Sino-mathematic speculation.

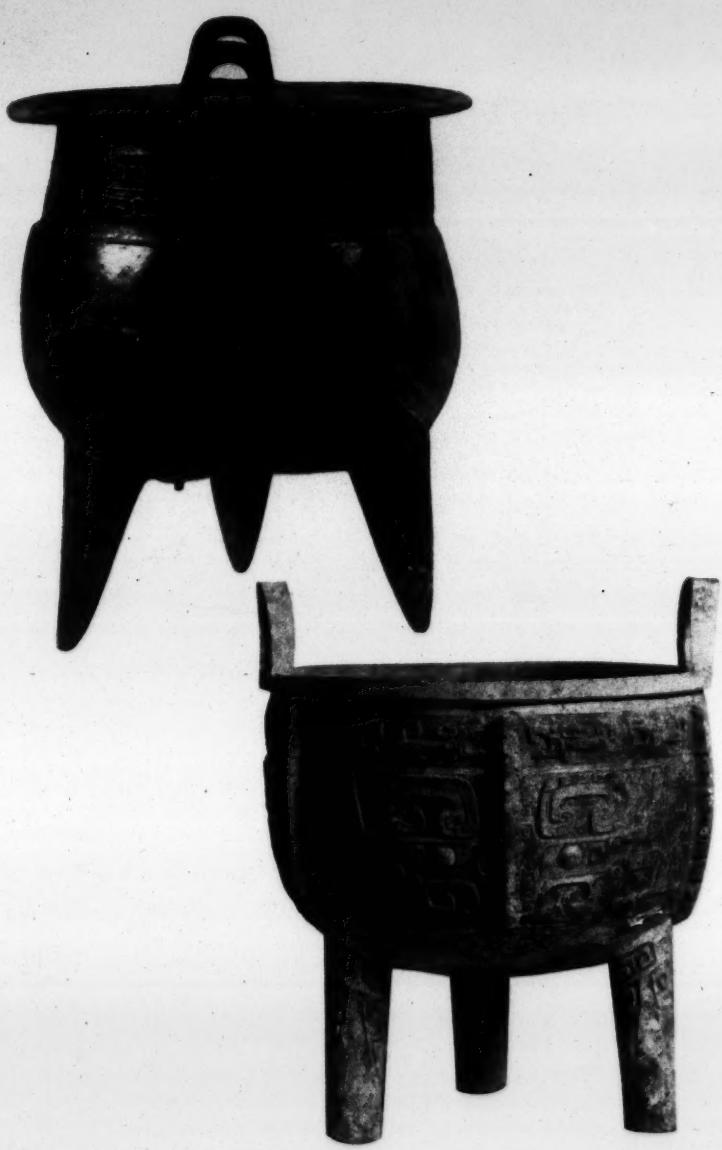
In the Shang socio-cultural setting, the food supplies were primarily agricultural products, perhaps supplemented by hunting or fishing. It may be assumed that the predominant food substances were within the range of common plant, animal, and fresh water fish. It is equally obvious that the very survival of the Shang people necessitated the replacement of the physiological waste of tissue and an extrinsic supply of

[29]. Porkert, p. 55

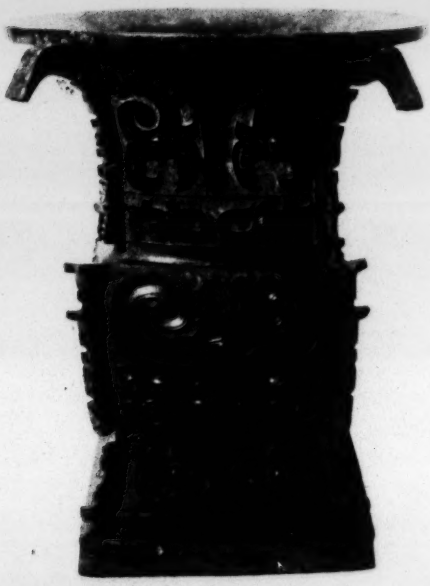
energy and heat for the human organism. It will be recognized that the development and advancement of the use of metal cooking equipment by the Shang people present problems of both food and container contamination.[30] Some of the signs and symptoms described in the 36 pieces of oracle bones may have been directly or indirectly caused by nutritional deficiency. Hippocrates (460-377 B.C.) pointed out in his treatise on Ancient Medicine that men first learned from experience the science of dietetics; they were compelled to ascertain the properties of vegetable products as articles of food. Then they learned that the food which was suitable in health was unsuitable in sickness, and thus they applied themselves to the discovery of the proper rules of diet in disease; it was the accumulation of the facts bearing on this subject which was the origin of the art of medicine.[31] Besides the function of medicine, Hippocrates encouraged and the Hippocratic Corpus emphasizes, the importance of nutrition and variety of diet effecting the human organism as a primary tool both in preserving health and curing disease. Although it is fully realized that there must have been a large number of studies on nutritive problems, little has been done on the effects of the extensive use of bronze cooking equipment in the Shang period and much further research on the subject is required and has many implications

30. Cheng, Shang China, p. 156

31. cf. Adams, Francis, tr., The Genuine Works of Hippocrates, Baltimore, 1939, pp. 1-18



Shang Bronze



Chou Bronze

for paleopathology.

According to Chinese dynastic history, the Shang were conquered by the Chou from the western region at about the time of the Aryan conquest of India. The Chou people continued the Shang tradition of bronze-working and took further steps in the development of the written language, although they were less advanced culturally than the Shang.[32] However, the progress and development of the language distinguishes the Shang from the Chou and suggests the existence of marked difference in mental attitudes during these two periods. For the Shang, pictographic symbols constituted a process of reproduction of a mental image which required the direct representation of objects as such, involving the transference of mental images on to a flat surface. Writing during the Chou dynasty was at first pictorial and ideographic, words being rendered by symbols or "characters" indicating meaning but not their phonetic components. As ideographic symbols, they possessed a high power of evoking abstract thought and inducing sensibility and response. On the other hand, the characteristic of the development in the morphology of the Chinese language during the Chou dynasty greatly advanced the language and its written expression as a medium for communication. The

32. Needham, vol. 1, p. 90

distinction between picto-recognition and sound-production reached an advanced stage in which pictographic (semantic) and phonetic elements were combined. The Chou seem to have applied the notion of compound-comprehension to other aspects of their life patterns. It may thus be assumed that the Chou people also made advances in cooking techniques in connection with which they undoubtedly discovered the properties of herbs.

As Henry E. Sigerist elaborates in A History of Medicine all animals sought food because their organism required it and so did man at all times. When illness took hold of the animal organism, instincts manifested themsleves in a special way. They craved what was needed to overcome the lesion and restore health. Just as man in health sought and instintively found the animal parts, plants, and minerals that his organism required for substance, so man in illness craved and instinctively found other plants, animal parts, or minerals that his body needed to overcome illness, or he ate foodstuffs in different combinations or of different quality. There was no sharp borderline between food and drug. If Sigerist's theory is accepted, it is reasonable to believe that it was the Chou people, with their mentality, who must have advanced the use of herbs in illness rather than the Shang people.

The Chou dynasty is far better documented than the Shang dynasty. However, the study of the Chou socio-cultural setting must be concentrated in two different levels between the Western Chou (1111-771 B.C.) and the Eastern Chou (770-481 B.C.). The Western Chou social organization did not differ much from the preceeding Shang dynasty. The leaders of the Western Chou period were as careful in victory as they were in the preparation of the conquest. Political development was under the supervision of the army after a victorious war. The bronze inscriptions of Western Chou contain valuable information on the Chou military movements, but there is no information at all on the popular medical care for those soldiers who were injured during battles. No document relating to treatment has been found during the Western Chou period which could be used for reference, except the calendar which was most useful as to climate conditions for agricultural pursuits. This calendar, still in use today, was called "yin-li 陰曆", meaning "lunar calendar".

In Chinese medical history, the lunar calendar has been extremely useful as a key to climate variations and diagnosis. Hippocrates said in one of his aphorisms: "The changes of the seasons are especially liable to beget diseases, as are great changes from heat to cold, or cold to heat in any season.

33. Chadwick, J., tr., The Medical Works of Hippocrates, Oxford, 1950, p. 155

Other changes in the weather have similar severe effects."[33] The climatic variations have been quite important for diagnosis in Chinese medicine. As Sivin elaborates:

> ....the decisive mutual interaction of emotional and somatic states has been one of the most constant doctrine of Chinese medicine. In fact we find intricately developed theories in areas that lie almost completely outside the intellectual horizons of the modern doctor. There was, for instance, a strict correlation of variations in the body's energetic functi ns with the cosmic cycles of the day and the yearly seasons. Beginning in the T'ang it was further elaborated in the yun ch'i theory to take into consideration in diagnosis the effects of unseasonable variations in climate and weather.[34]

Political and social changes also took place during the Eastern Chou period. Trade, industry and agriculture in the Eastern Chou founded upon the old economy based on a system of exchange, was very inconvenient and inadequate. But as metal currencies advanced, progress was made in almost every field of economic activity. The economic development ensured wealth and power, and led to territorial expansion. It has been noticed that iron was produced in large quantities during the Eastern Chou period. Technology advanced and machinery came into common use. Economic growth and the advance of technology determined for the Eastern Chou a more complex and progressive era than that of the preceeding Western Chou period.[35]

34. According to C. Y. Chen's History of Chinese Medical Science, Hong Kong, 1969, Chinese medical practitioners are still based upon the 24 festivals of the farming season to measure their patients. For example, the three days prior to the winter solstice or the summer solstice are the most critical days for diseases. The vernal equinox danger time for liver disease and the autumnal equinox is danger time for lung disease.

35. Liu, Yi-cheng, Chinese Cultural History, Nanking, 1932, pp. 157-161

By this time, it may be assumed that their more primitive beliefs had mastered under the powerful influence of reason leading to a better comprehension of the world, some notion of the progress of law and in all human and cultural values. The ideal of the Eastern Chou was apparently fulfillment in the harmony of pleasure. Moral consciousness and the root of morality became the essential element of the Eastern Chou society. The Li Chi Record of Rites (禮記), the whole of the Chou-li Rites of Chou (周禮) and the Yi-li Ceremonial Rites (儀禮), were compiled by Confucian scholars during this time to determine the correctness of beliefs and rites according to their principles and their philosophy.[36] In virtue, the Confucian ideological ethics did not seek to force moral principles upon reality, but evidently it was applied to the political power structure as can be traced from that most reliable document, the Chou li, one of the great Chinese classics.

In the Chou li, there are recorded rules concerning public health and medical systems. In the section on T'ien-kuan Shu (Astrological Treatise 天官書), it is stated:

> Medical officials were ranked in three levels: Superior, senior, junior and twenty assistants all in office to administrate the therapeutic policies under the feudal authorities and to select proper remedies for diagnostic purposes.[37]

36. Liu, Yi-cheng, Chinese Cultural History, Nanking, 1932, pp. 157-161

37. Chen, Pang-hsien, Chinese Medical History, Shanghai, 1937, p. 12

The earliest record on the Chou medical system is the writing by Wang An-shih (1021-1086 A.D.), a Dung dynasty revolutionalist. He stated in his Chou Li Hsin I:

> Officials trained in medicine, for therapeutic purposes, established an office to store remedies in order to heall illness and prescribe diet, under the feudal authorities. Thus, there were records to be kept, medical professionals to be trained; if all medical professionals who would receive the instructions from medical officials correctly, it would not be necessary to establish complex medical hierarchies.[38]

Evidently during the Eastern Chou period, a fairly elaborate medical system must have been established. This medical system must have existed as a cooperative endeavour between feudal authorities and the common people. T'ien-kuan Shu also records that "There were eight medical professionals who were in charge of rehabilitation of the people from sickness".[39] Documents of the Eastern Chou period indicate that the feudal authorities and medical specialists were provided in case of other illnesses. Since by these means the Eastern Chou demonstrated the importance with which they valued human welfare, we can only conclude that the medical treatment of the period must have been well-developed and must have advanced from earlier medical experience. Since medical knowledge and experience have taken a great many years to accumulate and formalized into a complex medical system; we can safely assume that the medicine of the Eastern

38. ibid., p. 12

39. ibid., p. 12

Chou period folllowed upon an extensive oral, and perhaps written, earlier tradition of which we know little. It is equally safe to hypothesize that this medical tradition must have gradually evolved during the Western Chou period, or even earlier. Although archaeological findings provide little information on medical development, the socio-cultural setting reveals a great deal of the character of medicine during the Western Chou period. In short, we can say that the medicine of the Eastern Chou period in order to have become so well developed and formalized, not only indicates a long prior experience, but provides a base for the understanding of the system recorded in the Chou Li on the medical organization and the training received by medical professionals.

In his Chinese Cultural History, the well-known historian, Liu Yi-cheng found that the Chou people had mastered the art of cultivating grains. Their daily food was chiefly cereal products. Indeed, feudal authorities of the Chou dynasty provided officials to oversee food production and to watch over distribution so that each individual had a sufficiency of food during the month. Liu's primary source was the Chou Li and his "Chou people" refers to the inhabitants of Eastern Chou.[40]

It has also been noticed that feudal authorities during

[40] ibid., p. 211

the Eastern Chou period established a law to balance the food production, relating population ratio with the regular inspection of annual statistics on the two factors to ensure adequate food supplies for the people.[41] Matrices were established to make factorial measurement of the differential coefficient between population and food production. Such heavy attention given to food production by the Eastern Chou rulers provides a permanent base for further analysis and understanding of controversial thought, since once the relations between nutritive deficiencies and diseases of the organism are ascertained, the details of diet leading to the taxonomic system which dominated the Eastern Chou period can be discussed.

In the Chou Li, the taxonomic sources of plant, animal and mari n animal origins are described. Dieticians tested the nutritive values of all food from various sources and planned for their use in the four seasons. The Eastern Chou people apparently were more advanced than earlier dynasties in the use of food additives which were employed to make adjustments in the seasonal diet through the suitable stimulus of seasonings.

Alcoholic beverages were developed during the Eastern Chou period. The period must have been acquainted with the knowledge of organic chemical compounds, i.e., reactions with

41. ibid., p. 212

acids to form esters, and with alkali metals to form the alcoholiates.[42] Such knowledge also simultaneously created social complications. A special officer was appointed to watch for alcoholism in order to reduce social disorder.[43] The presence of such an officer is testimony of concern for the public health during the Eastern Chou society. The social progress evidently required the assumption of moral responsibility by the people in their social relationships. The rational conscience had become aware of its moral duties and values resulting, in the truest sens, in the formation of a judicial conscience. The ethics of society and moral philosophy began to develop during the early part of the Eastern Chou period.

B. Ideological controversies

Chinese historians have usually divided the Eastern Chou dynasty into two periods: the Ch'un-chiu period (772-480 B.C.) and the Warring States period (480-221 B.C.). One might characterize the Ch'un-chiu period as a period of transition associated with the culture of the preceding Western Chou but eventually leading to the disintegration of the earlier cultural tradition. The moral forces in political dynamic during the Ch'un-chiu period were, phenomenologically speaking, in decline. Thus, the Ch'un-chiu

42. A special chapter on the knowledge of organic chemical compounds was particularly analyzed by Shang-k;uan Linang-pu in his History of Chinese Medico-pharmacological Development, Hong Kong, 1974, pp. 225-226

43. Liu, p. 212

period transformed the whole social order in virtue of its principles concerning the nature and status of human personality in society and the entire significance of civilization. Confucianism with its emphasis on moral behavior came into dominance during this time.

According to Needham, Confucius' interest in the orderly administration of affairs may seem dry and unromantic, but he lived in an environment where chaos generally reigned. There was constant war between the feudal states, the smaller ones serving as battlefields for the large. There was little law and order, save what each man could enforce by personal strength, armed followers, or intrigue.[45] A glance into the history of mankind would show that the causes of war were often connected with the very roots of the state itself, such as the natural growth of the people and the resulting pressure on living space--the acquisitive instinct in its primitive form--the power instinct of the ruling classes, and the instinct to expand resources with the drive for colonies and export markets. That is to say, those causes which make up the philosophies of life and history of the people and an indispensable means of education toward the development of their vitality. In Science and Civilization in China, Needham says:

> He [Confucius] probably did not believe that the

45. Needham, vol. 2, p. 5

> faults of his age could be cured by any system other than feudalism, but rather that there should be a return to what he conceived it to have been in its purest form, the ancient way of the Sage kings. Of course it was natural in his time to clothe ethical insights with legendary historical authority. Confucius called himself a transmitter, not an originator.[46]

The intention of Needham's summary was to lay a foundation for the development of his work. But the chief concern of Confucianism is in the ethics of society and moral philosophy which came to dominate all of Chinese civilization for two thousand years and ironically precluded the proper development of Chinese medicine.[47]

Samuel Left states in his Social Medicine:

> No serious study of social medicine can afford to ignore the profound effects of war on health. These effects operate even before actual hostilities commence, and they continue for many years after they cease. The harmful influence of war is not limited to the numbers of killed and wounded; its wide range can best be appreciated by an examination of the deterioration in the environment and of the consequent increase in the indecency of many years.[48]

It would be difficult to reconstruct the war situation during the Ch'un-chiu period. However, it is clear that the

[46]. ibid., p. 5

[47]. Yang, C.K., "The Functional Relationship between Confucian Thought and Chinese Religion" Chinese Thought and Institutions, University of Chicago, 1957, pp. 289-290: "Confucianism with its large rationalistic structural principles and ethical value system, holds a dominant position in Chinese social institutions...., permeates every aspect of Chinese social life, but without developing a position of general structural importance in social organization."

[48]. Left, Samuel, Social Medicine, London, 1953, p. 226

Ch'un-chiu period had in its contentiousness produced severe social stresses associated with the many active hostilities which broke out. The war casaulties had so increased the death-rate that the people began to despise the battlefield and its horrors which had forced society into destructive ruin. In such a physical environment, the philosophers raised their voices demanding at the very least a peaceful moment. Thus, the "Hundred Schools" began at this time.[49] Confucius was one of the greatest of reactionaries among the scholars of the "Hundred Schools". His doctrine of this-wordly social mindedness was interested in the orderly administration of affairs. Under such conditions a popularly based medical system could not naturally progress and from his time, almost to the present, Confucian ethics continued to block medical development.[50]

Although Confucianism has since been the orthodox and predominant ideology of the Chinese society, still there were other natural philosophies. Lao-tzu (born 590 B.C.) was called the greatest sophist, the Pythagoras of the ancient China. His was the most critical mind of his age, and his criticism was

[49]. Fairbank, John C., Chinese Thought and Institutions, Chicago, 1957, p. 243: "A more radical change took place in the late Chou period of the Warring States.....A number of commoners with extraordinary talent and unusual ability were able to impress the rulers of the various states and push their way into the upper stratum." Such development was called the "Hundred Schools".

[50]. cf. Hisao Ching (孝經): "human body is given by one's parents. One should not hurt one's body."

always destructive and iconoclastic. He held that "all things come from being; and being comes from non-being."[51] The non-being was the basis of his philosophy. He conceived a notion of a "State of Nature" as a state of extreme simplicity and natural innocence, reminiscent of the view of Jean Jacques Rousseau (1712-1778) on natural man, as a state of non-activity. With such an ideal state in view, Lao-tzu attacked the existing order of social and political organization. He found them to be imprudently civilized and artificial. He advised a return to nature. The way of nature is non-action. So he said:

> The more restrictions and prohibitions there are in the world, the poorer grow the people. The more inventions and weapons the people have, the more trouble is the State. The more cunning and skill man has, the more startling events will happen. The more laws and mandates are enacted, the more there will be thieves and robbers. Therefore the wise man says: I practice non-action, and the people of themselves reform. I love quietude, and the people of themselves become righteous. I initiate no policy, and the people of themselves become rich. I desire nothing, and the people of themselves become simple.[52]

Lao-tzu's philosophy may be best understood from his Tao 道, the origin and the principle of all things through a continuous physical process. The Tao became one of the basic manifestations which form the yin-yang duality. The yin-yang duality created plurality, so he argued and from the plurality arose individual things. As he expressed it: "Tao produced the One, the One produced the Two, the Two

[51]. Lao-tzu, Tao-te-ching, paragraph 40

[52]. ibid., paragraph 57

produced the Three, and the Three produced the myriad phenomenal things."[53] His transcendental notion of nature furnished the foundation of natural or physical phenomena for later philosophers.

Needham has paid great attention to the Taoist concept of nature for his interpretation of Chinese science. Shigeru Nakayama writes in his Joseph Needham, Organic Philosopher that Needham's evaluation of Taoism follows three viewpoints: (1) Chinese learning was polar, the antipodes being the "masculine" Confucian thought of the ruling class and the "feminine" Taoist thought of the ruled; (2) Taoism was anti-orthodox. Science could not have flourished under Confucian feudalism but only in an opposed tradition; and (3) Science was born out of myth and magic, as the development of chemistry out of alchemy. Evolution was by orthogenesis. Nature-mysticism was given more weight than usual, and scholastic rationalism less.[54] It is correct, however, to say that Taoism encouraged enlightened scientific speculation, but it would be too opinionated to draw so sharp a line between Confucianism and Taoism to explain scientific development in ancient China. In fact, the concept of physical process has always interested the philosophers of ancient China. Shortly after Confucius, in addition to the attitude of the Taoist concrete reality of Tao, we must examine Mohist ideology.

53. ibid., paragraph 1

54. Nakayama, Shigeru, "Joseph Needham, Organiz Philosopher", Chinese Science, M.I.T. Press, 1973, pp. 37-38

Mo Ti (born during the reign of King Ting, 468-441 B.C.) was one of the greatest philosophers of ancient China. His philosophy was the earliest philosophical rival of Confucianism. According to Graham and Sivin, the Mohist Canon or Mo-ching 墨經) advanced such ideas as "promotion of worth", "universal love", "rejection of aggression", and "rejection of fatalism".[55] The most important contribution of Mo-tzu was to the knowledge of reasoning which had even greater importance for medicine. For example, Mo-tzu book 33, section 8, states:

> Why a thing becomes so, how to find it out; and how to let others know it--these are not necessarily one and the same thing: the reason is given under disease. Something is injured by something else: that is the cause of the disease. To find out the cause is knowledge. To tell others what is found is to make others know.[56]

These concrete notions should be considered as the earliest development of medical thinking on causality as part of the response of anti-Confucian ideology. Whether or not the Huang Ti Nei Ching was written during this time will be considered after clarification of this controversial ideology.

55. Graham, A. G., & Sivin, Nathan, "A Systematic Approach to the Mohist Optics: Chinese Science, M.I.T. Press, 1973, p. 106

56. Needham, Vol. 1. p. 83

III. The "Silent Art" of Ancient China

A. Ancient Medical Corpus

Most scholars refer to the Huang Ti Nei Ching (The Yellow Emperor's Classic of Medicine) as the most ancient medical corpus, originating at an exceedingly early period. However, from the documentary research, both on internal evidence and external evidence, the Huang Ti Nei Ching could not possibly date back to the prehistoric and legendary sage king Huang Ti, 'the Yellow Emperor 黃帝), who is supposed to have reigned in the twenty-seventh century B.C., that is, at a period far earlier than the archaeological findings of the "Yang-shao culture". Furthermore, Chinese ideographic writing is known to have developed from the most elementary pictographic symbols which are not older than three thousand years.[57] Thus, it is impossible to believe that writing as highly stylized as the Huang Ti Nei Ching could have originated during the prehistoric and legendary period of Huang Ti.

Although archaeological, geological and comparative knowledge may help with the dating problem in many ways, nevertheless the most recent work on radio carbon dating as discussed by Calin Renfren in his book Before Civilizations shows how unreliable these methods are and atomic dating, even if to some degree still problematic and debatable,

57. ibid., p. 86

illustrates how crude the earlier techniques are.[58]

In her monumental work, The Yellow Emperor's Classic of Internal Medicine, Ilza Veith examines the age and the authorship of the Huang Ti Nei Ching. She utilized the largest and most complete Chinese bibliographical dictionary Ssu-k'u ch'üan-shu tsung-mu t'i yao and found that "the earliest mention of the medical work can be found in the annals of the former Han dynasty (206 B.C. - 25 A.D.), where it appeared as Huang Ti Nei Ching and which was listed as having eighteen fascicles. The treatise of the Su Wen itself was first mentioned by the great physician of the second century A.D., Chang Chung-ching, who quoted it in his famous "Treatise on Typhoid Fever". During the Chin dynasty (265-419 A.D.) the eighteen fascicles of the Huang Ti Nei Ching were again mentioned in the preface of a medical book by Huang-fu Mi. But its full title, Huang Ti Nei Ching Su Wen, was recorded for the first time in the annals of the Sui dynasty (589-618 A.D.). At that time, however, ten of the eighteen previously mentioned books had disappeared for the treatise was listed as containing only eight books."[59] Veith has further researched the question of age and the authorship stating:

> According to the "Treatise on the Canons and Literature", the history of the former Han dynasty the Huang Ti Nei Ching consisted of only eighteen books and did not carry the (additional) title of "Su Wen". Chang Chung-ching of the later Han dynasty

58. Renfren, Calin, Before Civilizations, Alfred A. Knopt New York, 1973

59. Veith, Ilza, The Yellow Emperor's Classic of Internal Medicine, University of California Press, 1949, p. 8

> quoted this work in his "Treatise on Typhoid Fever" and began to call it Su Wen. In the Ching dynasty it was mentioned in the preface to the Chia I Ching of Huang-fu Mi that there were nine rolls of the "Classic of Acupuncture" and nine rolls of "Simple Questions" and both of them were parts of the Nei Ching; (thus) its total number of books coincided with the eighteen fascicles mentioned in the History of the Former Han dynasty.[60]

From Veith's examination, it can be ascertained that it was not uncommon in China for writers to ascribe a later work to an earlier origin: a phenomenon known as "priorism". However, early historical allusions provide no support to these "prioristic" attributions. The anachronisms in ancient Chinese classics are often due to later absorptions of commentaries and may vary according to the date of the insertion into the texts.

From the textual point of view, Ling Shu and Su Wen were two parts of Huang Ti Nei Ching. They have been considered as the earliest Chinese medical corpus. Most sinologists believe that the Huang Ti Nei Ching must have been compiled during the former Han dynasty since the Han Shu (the History of Former Han) mentions the document. Furthermore, some philosophers believe that the Huang Ti Nei Ching should not be dated earlier than Tsou Yen, a natural philosopher and founder of the yin-yang school, because the Huang Ti Nei Ching elaborated Chinese medicine according to the yin-yang principles and the five elements.

60. ibid., p. 77

Tsou Yen, a fourth century philosopher, suffered more than Confucius after the feudal government had divided into the seven states during the early part of the Warring States period. He, as well as Confucius, reacted to the war stress and systematized his yin-yang school, one of the "hundred schools", to extress his reactionary view on the social stress. However, the concept of yin and yang was not originated by Tsou Yen. As with Confucius, he was also a transmitter rather than an originator of the yin-yang thought. Since sinologists believe with some certainty that there is no earlier document mentioning the Huang Ti Nei Ching than the Han Shu, this at least establishes a point of reference or a terminus ad quem, but leaves the socio-cultural setting as internal evidence with which to date the Huang Ti Nei Ching.

The documentary history of the medicine of China may begin with the Shang culture, tentatively with the names of diseases found in 36 pieces of oracle bones. The Shang people recognize those particular distinctive processes which occur in the human organism as characteristic symptoms of corporal or mental disorder and referred the diagnostic names to the primitive practice of "divination". This strongly suggests that they regarded the existence of diseases as a reality which can be conceptualized as an abstraction to give coherence to therapy, even of divine origin. It seems self-evident that

the Shang people as in many primitive societies relied upon divine conjecture, necessarily through a human interpreter for understanding illness rather than the act or process of deciding the nature of a disease by examination. This generalization does not necessarily rule out the use of therapeutic modalities ranging from magic to the healing arts during the Shang dynasty. In Traditional Chinese Medicine, Robert F. Bridgman illustrates a historical perspective on archaeological findings of the oracle bones and believes that several symptoms of disease and the characters for physician (醫 師) and sorcerer(巫) are to be found in the inscriptions of oracle bones. However, it is impossible to know whether a medical theory or system existed at that time.[61] We can only agree with Bridgman's historical analysis that a rational theory or system of medicine may not necessarily have been established at the time of the earliest Chang rulers. However, it is not impossible to believe that various types of therapy may have developed during the Shang period to relieve certain forms of discomfort.

The concentration of the population of the Shang period was along the southern banks of the Yellow River. Because of the geographic environment, climate and proximity to river and grassland, the diet was limited to cultivated plants, the existing native vegetaion, the products of grazing animals,

61. cf. Bridgman, Robert T., "Traditional Chinese Medicine", Medicine and Society in China, Josiah Macy Jr. Foundation 1974.

and to fish from the Yellow River. Whether the enery sources of diet, such as proteins, fats and carbohydrates of various origins were sufficiently available to the majority of the Shang population or not, there is no way of measuring or estimating. However, nutritive deficiencies may have occurred with resulting disorders of function in many parts of the body. These complications may have been associated with defects in the pattern of food intake or defects in assimilation as is not uncommon among such agriculture-based society as that of the Shang period. These inferences can be easily generalized from both the Su Wen and the Ling Shu of the Huang Ti Nei Ching.

Wolfram Eberhard has found that the Shang civilization was beyond doubt a high civilization. The Shang were primarily agriculturists, but their implements were rudimentary. During the time of the Shang dynasty, the Chou occupied a small realm in the west. Before the beinning of the eleventh century B.C., the Chou must have been pushed into eastern neighboring countries.[62] The Chou eastward migration brought them within the boundaries of the Shang culture, by which they were strongly influenced, so that Chou culture lost more and more of its original character and increasingly resembled the Shang culture.[63] The most significant event of the Western Chou dynasty was their development of the Shang calendar

62. Eberhard, Wolfram, "Early Chinese Cultures and their Development, a Working Hypothesis" ARSI, 1937, 513

63. cf. Cheng, Te-k'un, vol. Three

from a primitive empirical system of determining the length and divisions of a year to a systematic lunar calendar. The lunar calendar is not only essential for agriculture but was taken into consideration in medical treatment. Such evidence is readily retrievable from the contents of the Nei Ching. The use of the lunar calendar is certainly valuable internal evidence in determing the terminus ā quō, however approximate, of the beginnings of systematized medicine in earliest China.

During the Western Chou dynasty, the energy values of foods were investigated by the medical officials for Chou feudal authorities. Although there are no details on the methods employed in food testing and the investigation of their energy value, there is external evidence which provides us with some comprehension of their view on food chemistry. Furthermore, alcohol was produced not only for the Chou feudal authorities, but was a common beverage used by the general public without restriction. There is no information as to how and under what circumstances alcohol was discovered. We only know that alcohol was manufactured in abundance both in the form of fermented drink and as a distillate.

The appointed medical officials during Chou were not only concerned with the verification and analysis of

foodstuffs, but they were chiefly involved in the practice of medicine. By this time, the practice of medicine had become a complex and complicated subject due to the advancement of food chemistry. Alcoholism had become a major social problem for the Western Chou.[64]

The diagnosis of the causes of failure of an existing social order is the task of the social historian. Social history primarily involves the development of a sense of responsibility, which may or may not result in social reform. Failure to advance the social system and to fulfill its functions may result in either social revolution or progressive deterioration of the society. Confucius intended to promote the Chou society. Unfortunately, his theory of human-heartedness misled the social behavior. As a result, his concept of human decency hindered the progress of medicine.[65] However, Confucius favorably influenced the social structure in devoting a great deal of his life to education. His rational thinking not only influenced his disciples but was also transmitted to the public, creating the accepted social and ethical standards. Unlike most of his contemporaries, Confucius influenced later generations more constructively than did his opponents such as the Taoist and other philosophers.

Needham suggests that Tsou Yen may have been the original founder of the yin-yang school and could very well be the

64. Liu,Yi-Cheng, Chinese Cultural History, Nanking, 1932, pp. 212-213

65. Hsiao Ching

leading personality of Chinese Sciences.[66] Such an assumption is not very convincing since the Chinese Classic I-Ching, the Book of Changes, dealing with cosmic components and changing relations, was certainly composed long prior to Tsou Yen. The concept of Yin and Yang must have been an older speculation that developed before Tsou Yen. We can presume that Tsou Wen was the individual who synthesized the notions of yin, yang, and five elements into a unique theory which was very popular among the commonly accepted systems of the fourth century B.C. On the other hand, the Nei Ching may be simply a collection of accumulated knowledge from earlier medical experience compiled by someone during the fourth century B.C., with alterations and additions of his own. The composite style would by all means follow the contemporary fashion as well as Tsou Yen.

We can conclude that medicine began in ancient China with the distinction made between health and disease during the Shang period and continued its advance with concept of the dynamic nature of the disease process and prevention of illness during the fourth century B.C. under the Chou dynasty. This occurred at the same time that Greek medicine at the hands of Hippocrates reached a stage of rationalization. The Nei Ching is undoubtedly the result of a similar rationalization based upon the accumulation of earlier medical experiences and

66. Needham, Vol. I., p. 96

theories.

"Priorism", as was pointed out, has been a most prominent component in the Chinese cultural tradition and assisted in establishing a basic image of importance in maintining continuity and stability in the development of Chinese civilization. The compiler of the Nei Ching has attributed the work to the earliest Sage-king Huang Ti following contemporary fashion, as is done by Confucius who likewise favored the Sage Kings. The notion of "priorism" in the Chinese cultural tradition seems to have been derived from the Shang cultural tradition of ancestor worship which instils a respectful sense of priority, just as the Sage Kings became the moral model for Confucius. To attribute the Nei Ching to Huang Ti is characteristic of the customs of the fourth century B.C. in China.

The process of transforming their current king into a "prioristic" mental image may be reflected in the morphemes and in their communication. Thus, it is quite possible that the morpheme Su Wen (simple questions) was derived from and reflects the proto-notion of divination by oracle bones. As continuing traditionally the simple questions themselves to the compiler of the fourth century B.C., the Shang culture would be historically the most ancient culture known to him. In contrast to the Su Wen, we have the morpheme

Ling Shu (the Vital axis) which must be a later addition since the morpheme is more speculative and may have originated during the more sophisticated period of the "hundred schools". From such interences it is proper to date the Nei Ching as a fourth century B.C. collective work in which its morphology....and we can consider the Ling Shu as originating somewhat later than the Su Wen. The secondary compiler following Chinese "priorism" has attributed the Nei Ching to Huang Ti, the Sage-King.

In part I, it was declated that this dissertation would concentrate on Ling Shu Ching, the second half of the Huang Ti Nei Ching, and would elaborate on this earliest medical corpus of ancient China. It is customary to translate or interpret the Chinese name and title of a text into English at the very beginning. However, expression has been a barrier, hence a particular method was necessarily evolved in order to decrease the semantic problems. The most effective method should be Rudolf Carnap's Meaning and Necessity which is the most recent and essential study in semantics and model logic. To Rudolf Carnap, the customary method in the analysis of meaning regards an expression as name for a concrete or abstract entity but it should be carefully examined in the determination of an identity expression.[67] The exact translation of a name or term from Chinese into English

67. Carnap, Rudolf, Meaning and Necessity, University of Chicago Press, 1960.

requires much more than agreement in the intention of designative meaning in order to avoid other possible connotations of meaning. Thus, it seems proper to convey the title of Ling Shu according to the cultural postulates of ancient China.

The Chinese language has a number of special features. There is no inflection or conjugation of words to alter their form in context. A symbol of "character" indicates its meaning but not its phonetic components. In an allusive combination of symbols, each symbol contributes to the meaning of the whole, one qualifying the other in metaphorical fashion. "Ling 靈" could be a noun meaning "spirit", "soul", and also could be an adjective meaning "spiritual", "mystic", "supernatural", "divine", "intelligent", or "effective". "Shu 樞" is a noun meaning "Axis", "pivot", "the center", "the prime", and "principle". Veith translate Ling Shu as "Mystic pivot", Needham translates the same expression as "The Vital axis", only Porkert interprets the possible meaning without giving a translation. Both Veith and Needham have utilized terms which are adequate reflections of the general Chinese meaning and can be accepted. However, if ancient Chinese medicine is what we shall postulate in Part II, the meaning of Ling Shu more probably designates a more restricted sense. A "word-by-word" translation always involves

the problem of the distinction between a term or expression and its actual sense. For the sake of expression, it may be desirable to translate Ling Shu in the English language as the "Principles of Medicine" (a free equivalent of spiritual center).

Speaking of "name and sense", A. G. Graham and Nathan Sivin expressed the problems of comprehension and translation from an ancient Chinese document, the Mohist Canon, in ther article "A Systematic Approach to the Mohist Optics":

> The identity of a work of art is always a major accomplishment, for it indicates where a scientific concept has been isolated out of familiar experience. In China, as in other culture before the scientific Revolution, most special terms were borrowed from ordinary language, not newly coined. They are identifiable only because they were given new senses which they did not have in everyday speech. "Tan 丹 " the word for cinnabar, was borrowed to refer to any alchemical elixir, even those which did not contain cinnabar. "Fu 伏 ", a common word meaning, among other things, "to subdue" was taken to refer to laboratory processes which rendered inorganic substances impervious to physical or chemical change, while in daily discourse the word had no application to minerals at all. On the other hand, if the idea of technical terminology is to have any meaning at all, one is not free to suggest a special sense when the everyday sense is fully applicable (unless, as is often the case, the technical sense is earlier).[68]

Graham and Sivin's statement has reference not only to the Mohist Canon, but to the problems of comprehension and translation which certainly exist for most ancient Chinese material. From a philological point of view, the principles

68. Nakayama & Sivin, "A Systematic Approach to the Mohist Optics" Chinese Science, MIT Press, 1973, pp. 111-112

of interchangeability and the identity between word-expression can easily distort the state-description and cause more semantic problems. For a concrete or abstract entity in a symbolic language, word-expression may show additional complications due to the oblique context or to a certain traditional distinction. In the best sense expressing the intrinsic meaning of the Ling Shu Ching, interpretation must be extrinsic and penetrating rather than a "word-by-word" translation. In the Chinese language, the etymological origin may be extremely helpful for the elucidation of certain terminology. This statement can be easily verified from the terminology used in expressing the causal principle of disease.

In Part I, the proposition was put forward on the primitiveness of the initial concept of natural phenomena, the notion of a relationship between the microcosm and the macrocosm which was derived from the contemplation by the ancient Chinese people on the correspondence between the physical environment and natural order with the physical substance of man. In the domain of the physical environment, the ancient Chinese could only speculate on the nature of the objective entities, such as "earth" providing the most wonderful productive source of agricultural products. Similarly, "water", "wood", "fire", and "metal" would be regarded as the objective entities for daily necessities. Hence they were the

basic and primary elements of matter.* In the ancient Chinese mind, there was nothing extraordinary about their intrinsic nature. In human communication, these basic elements were symbolized by their objective appearance as represented in pictographic expression. However, in any circumstance, irregularity of the primary elements would definitely be regarded as a sort of natural crisis and a natural crisis would result in unusual astonishment, in the agricultural society variously interpreted as a miracle or a disturbance. There is no wonder that in the oracle bones, the Shang royal house paid so much attention to natural phenomena regarding rain, wind,clear weather, water, and of course, the harvest. Undoubtedly, great attention was paid to natural phenomena long before the Shang period. Perhaps the range of natural phenomena included related causes in addition to the five basic elements.

The inter-relationships between the five elements often determined the causes. For example, "flood" or "drought" may be caused by "water overflow", or it could be even extended to the supervening causes of "wind", "rain", and "moisture". The ancient Chinese must have speculated on the causes necessary for the establishment of a natural crisis derived from their cause experience. The accumulation of such knowledge would provide a basic foundation for the later theory of the "Five

* Hughes calls the "Five Forces, explained as the "Five Dynamic Physical Foces".

Elements".

The natural crisis, whether due to intrinsic or to extrinsic cause, taught the ancient Chinese to interpret and avoid emergencies. Unexplainably, under the pressures of natural phenomena they perhaps sought life "adjustment". In the productive "earth" ground, they would select the most secure geographical area for a peaceful life. The experiences would enlighten them in relation to geographical conditions qualitatively and quantitatively. In their own "adjustment", they would readily recognize by experience whether the heat from the sun was beneficial or not. In the ancient Chinese mind, nothing seems to have conditioned absolute value, since the shade, not the sun, might be the most valuable condition for certain agricultural production. Beyond the basic elements of their daily life there would be the extrinsic forces, namely those of the cosmic order. For the ancient Chinese were primarily concerned with the adjustment to conditions which would secure life or the living environment. They apparently had not yet arrived at the notion of "class" or "property". The terminology "yin 陰", "yang 陽", and the "Five Elements" (五行) were definitely a later development or formalization. Rather than phantasizing the theory of "yin" and "yang" or the "Five Elements" as something fanciful or mysterious, we should accept these concepts in a manner that is "down to the earth" from which they evidently had

their origin.

B. Medical Concepts in the Medical Corpus

As a physical condition affecting man, "disease" was held to be a harmful discomfort. Some analogy was drawn between "human discomfort" and a "natural crisis". To the ancient Chinese, knowledge of a natural crisis was correlated with human discomfort. From the topological point of view, "blood fluid", "temperature", "bone" and "skin" physically resemble the types of the five elements and their associated extrinsic causes. It is quite plausible to assume that ancient Chinese medicine considered natural phenomena such as Yin, Yang, and the Five Elements to be causal principles of disease. Incidentally, these causal principles of disease in ancient Chinese medicine are quite similar to Ionian thought in deriving the humoral pathology from the four elements. Ancient Chinese medicine, naive in its beginning, provides no musterious nor magical conception which would lead to the notion of a symbolic or topological representation in relating a natural crisis to human distress.

Although the causal principles of disease in ancient Chinese medicine were inferred from an analogy between the structural causes of natural growth and human disorders, the natural metamorphoses, by virtue of their formation, could

could very well take place and become the disease agents of the human organism. The causal principles of disease as natural phenomena, yin, yang, and the five elements, eventually would be elaborated into an extrinsic medical theory as the ancient Chinese idealized the essential functions of the natural elements and their relationships, and from them solved the causal factors which became responsible for the etiology.

In the Ling Shu Ching, chapter 66, the ancient Chinese medical corpus generalized the causal agents for illness especially from the external natural phenomena as the "wind", "rain", "cold", "heat", and "damp" which are recognized as the causal agents for most illness. Thus chapter 66 is entitled: "The Inception of Diseases 百病始生 " a phrase which incorporates concepts of etiology.

Etiology correlated the development of morbid conditions with the individual organism and physical signs. Ling Shu Ching, chapter 46, "Five Perceptible Changes 五變 ", (translation One) further exemplifies the interference which may occur at any point followed by some impairment of bodily function in a manner analogous to the woody perennial plant which suffers from the influence of natural effects. The medical literature of this particular chapter is expressed metaphorically, but in its essentials is basically realistic.[69]

69. See relevant translation one (attached with Part III)

The chapter begins with an analogy concerning a woody perennial plant. The cutting process is shown to depend upon the condition of the main stem and its branches and the natural environment throughout the operation. The state of the wood is naturally subject to growth factor, plant morphology and the conditions produced by the natural environment. The dialogue carried out in Ling Shu Ching attempts to demonstrate that the human organism is in complete accord with the surroundings and condition which result in the plant's morphology. The medical literature implies coincidentally that ancient Chinese medicine at first originated from the cognitive knowledge of natural phenomena which was then extended to the human organism. Biologically speaking, the fundamental structure and function of man, animals, and plants was regarded as identical for all practical purposes. Incidentally, it has long been held that illness was a struggle between the physis, the nature, of a sick person and noxious influences. Illness was a natural process. the morphological expression in the Ling Shu Ching infers the appreciation of a metaphoric view of nature to the human physical signs as early as the fourth century B.C., which is crucial and significant. Besides the causes of disease, the chapter also points out that the physiological state is the most important factor for the welfare of the human organism.

Chinese physiological knowledge did not develop consistently with anatomical knowledge. Chinese anatomy was simply a mixture of actual and theoretical concepts. For Chinese anatomy, owing to Confucian ideology, dissections were strictly prohibited. It was confined to a few salient facts, incorrectly correlated, from the experience gained from one or two accidentally killed and crudely dissected human cadavers and from animal observation. In the Ling Shu Ching, chapter 14, "Skeletal measurements 骨度 " the Chinese knowledge of the human skeleton is expressed, but the measurements do not seem to be realistic. It is important to understand fully the "Cardinal conduit" system of the human body which is peculiar to Chinese medicine and is discussed in chapters 11, 12, and 13 of the Ling Shu Ching. The ancient medical corpus brings into correspondence the twelve "physio-conduit" of the human system and establishes their identity with the twelve main rivers, their width, length, river course, and even their source. Thus, the understanding of the cardinal conduit system in the human body is really a reflection of the geography of ancient China. This is not merely shown in the imaginary knowledge of anatomy but the development of correspondences indicates that the ancient Chinese were concerned with its microcosmic implications to man. Although the medical literature describes

the "physio-conduits" [Porkert's usage] system in three chapters, the description of the topographic relations of the cardinal conduits is logically antinomy in the sense of a contracition of conclusions and is in a sense paradoxical. Such knowledge is confusing and eviently a disadvantage to the knowledge of physiology, but this statement may not be true, since there were many terminologies of even more importance in physiology than in anatomy. Porkert said in his The Theoretical Foundations of Chinese Medicine;

> All sinarteries, irrespective of category, are conduits for the different forms of physiological energy. They conduct this energy between two orbs, between an orb and the extension known as its unfoldment (perfectio) or, more generally, between the interior of the body and its surface.[70]

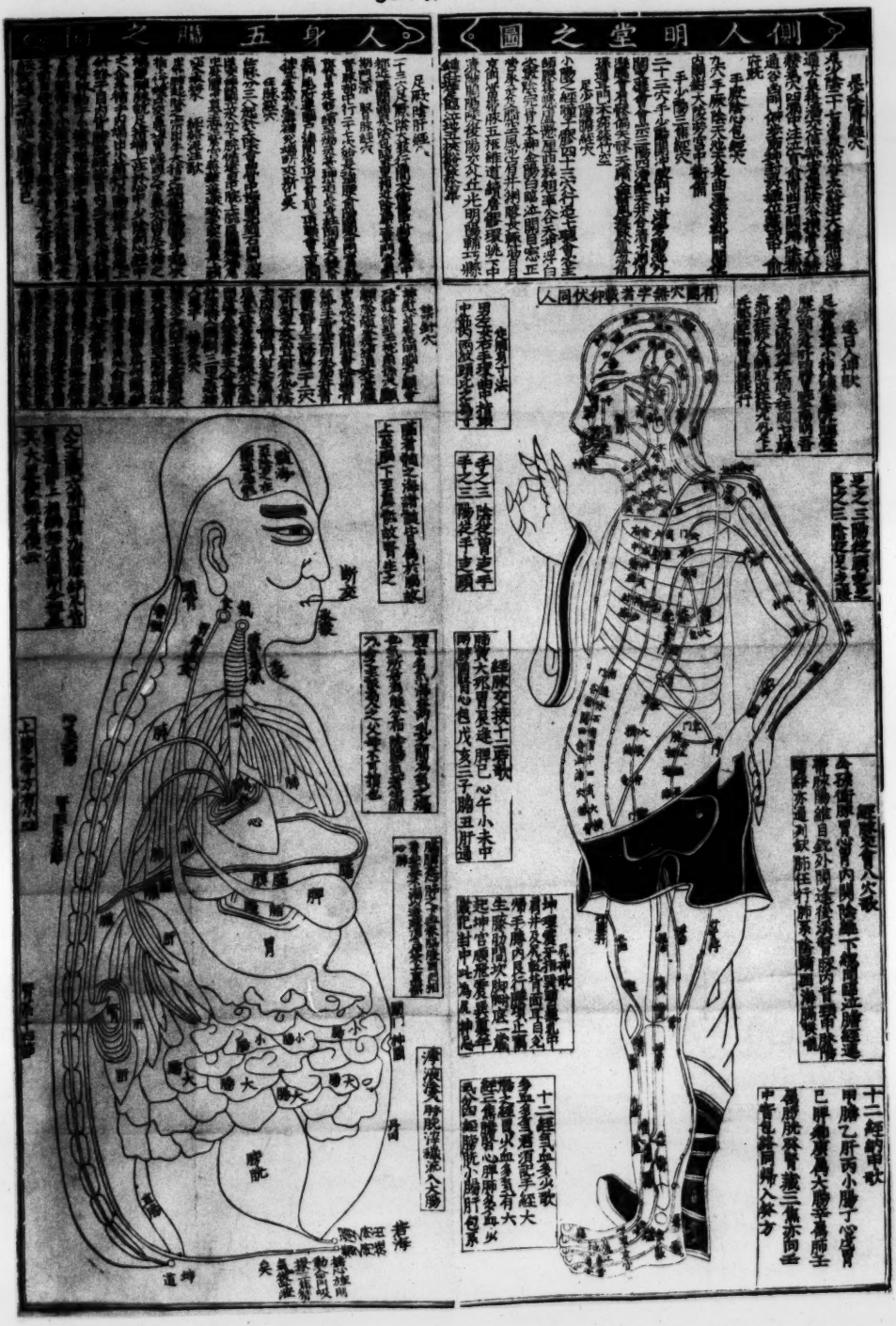
Clearly, the ancient Chinese made no sharp distinctions between anatomy and physiology and in the ordinary sense, the ancient medical corpus is not primarily scientific but in part philosophical and metaphysical.

In theory, William C. Cooper and Dr. Nathan Sivin found in "Man as a Medicine";

> Since Chinese anatomic and physiologic concepts were not consistently and rigorously tested against a reality that resembles our own, we are naturally tempted to ask whether the system's ability to survive really had little or nothing to do with rigorous experiential testing, whether it was merely the result of luck or unsystematic common sense that the traditional physician was able to cure his patients with some regularity.[71]

70. Porkert, Manfred, The Theoretical Foundations of Chinese Medicine, MIT Press, 1974, p. 202

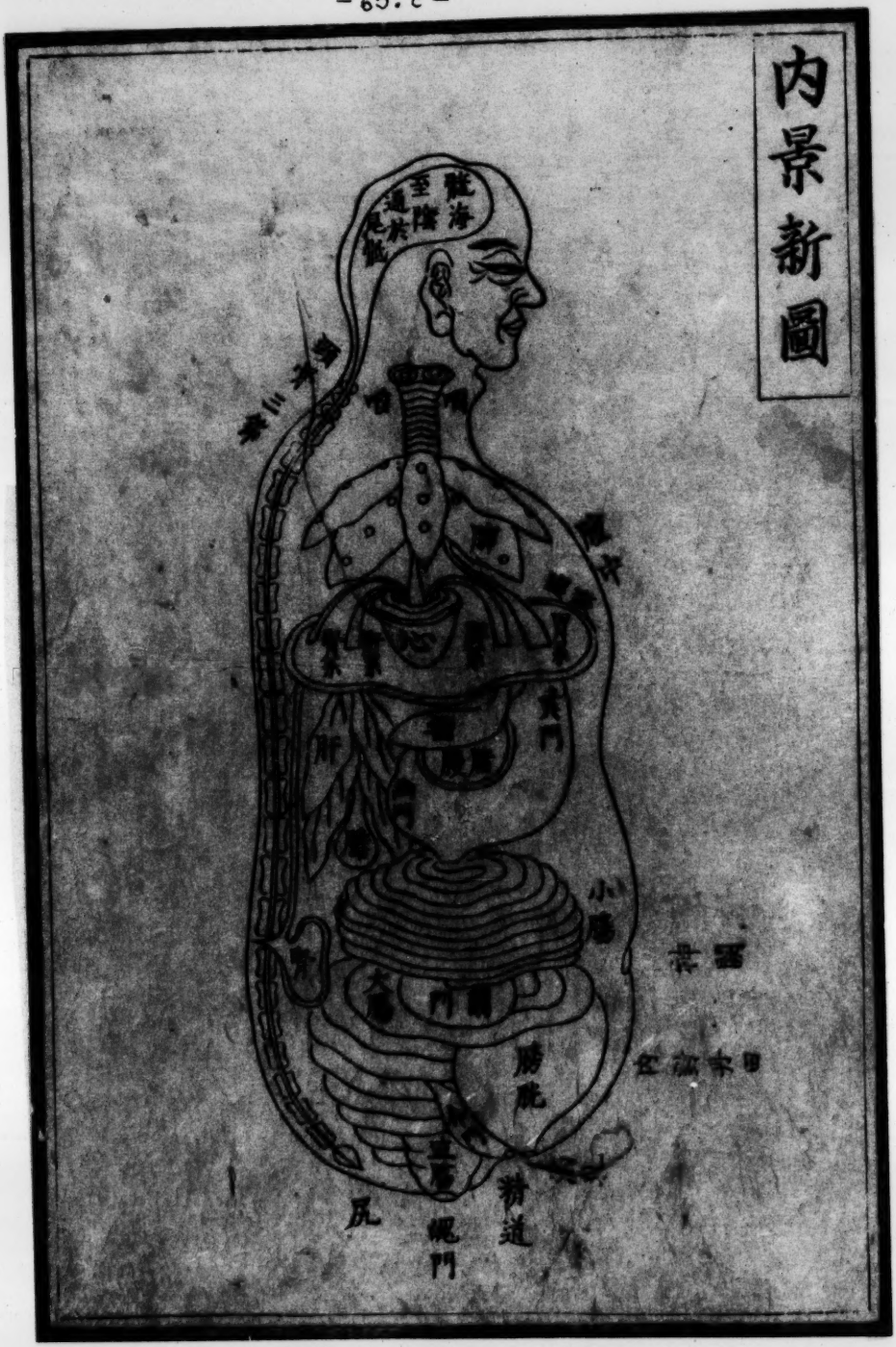
71. Cooper, William C. & Sivin, Nathan, "Man as a Medicine", Chinese Science, MIT Press, 1973, p. 204



Jen-shen wu-t'sang chih tu; T'se-jen ming-tang chih tu (1550?) Scroll

Rare Book Collection, University of California, San Francisco

Internal organs (old drawings)
Naikei Zusetsu (1722) by Noritada Hattori
Rare Book Collection, UCSF



Internal organs (new drawings)
Naikei Zusetsu (1722) by Noritada Hattori
Rare Book Collection, UCSF

They also stated:

> The literature of Chinese medicine is, after all, a partial record of which possibilities were chosen while others were rejected, and why. The serious and attentive study of these rationales for historical choices has hardly begun, but there is no longer room for doubt that they formed conscious, consistent, coherent patterns.[72]

Cooper and Sivin certainly sensed the general picture of traditional Chinese medicine. If there was no supporting literature in the Ling Shu Ching which referred specifically to physiology, nevertheless the phrase in chapter 36: "Five conditions of active and constructive fluids 五癃津液" (Translation Two) continued from chapter 35 on symptomatic signs, refers to a philosophical basis for physiological workings of the digestive processes. Although the same chapter describes digestive problems in a quasi-philosophical fashion, nonetheless the description is quite extraordinary in what it reveals of early Chinese medical knowledge.[73]

Though to the modern reader, the "Five conditions of active and constructive fluids" was no great advance in physiology in relation to ancient Chinese thought, it was significant, particularly in that it initiated the notion of vital forces.

For the active and the constructive fluids, Porkert analyzed the intention of the intrinsic meaning of the original words: "chin 津" and "yeh 液". He explained

72. Ibid., p. 204

73. See relevant translation Two

in his "The Forms of Energy":

> Chin designates the active, and yeh the structive, aspect of structive potential substantialized in the form of body fluids. These narrowly defined terms thus are close semantic parallels of ying (營) and wei (衛), but their aggregate state is never defined. Like the defensive energy, chin constitutes an active, or more precisely, an activated potential that diffuses within and from the body: "that which percolates and perspires through the pores is called chin." Like constructive energy, the structive fluid yeh is what irrigates the bones "when food has been ingested and the physiological energy (ch'i) has been replenished (man 滿), and after the bone framework has been irrigated, what completes and replenishes the energy of brain and medulla and causes the healthy luster of the skin."[74]

Porkert's concept of the meaning of the "active" and "structive" fluids reveals other forms of energy such as ying and wei. They are both regarded as subjective matter concerned directly with the domain of physiology and this matter was related to preventive medicine. The concept processes a long tradition going back to the Eastern Chou dynasty (772-480 B.C.). Needham is one of the few who has drawn attention to this subject. In 1962, he published an article entitled "Hygiene Preventive Medicine in Ancient China" in the Journal of the History of Medicine and Allied Sciences. Here he remarked that early concepts of prevention might date back to the Chou period since the Chou Li contained so many references to preventive medicine:

74. Porkert, pp. 190-191

> We may find a good statement of this conception in another part of the Nei Ching, the Huang Ti Nei Ching, Ling Shu (The Yellow Emperor's Manual of Corporeal Medicine; the Vital Axis....Here we find the statement that 'the chen chi is an inborn nature received from Heaven, and the body in which it exists is fortified by the pneuma of food (literally, the cereal pneuma, ku chi)'. Thus we see that the chen chi is a composite term made up of the inborn constitution and the resistance built up by the nutritional regimen and regularity of life which the individual follows or encounters.[75]

Ling Shu Ching, chpater 18: "Nutritive hygiene and the Vital process 營衛生會 " (Translation Three) discusses a series of processes by which an organism takes in and assimilates food for the promotion of growth and replacement which functionally have to do with the condition of the "blood" and the pneuma respiration. It should be noticed here that the connotation of the term pneuma was of different intention than that conceived by Erasistratus in the circulation of the pneuma. The ancient Chinese probably sensed the notion of ch'i 氣 simply from meteorological phenomena and natural changes. Porkert translated ch'i as "configurational energy" in one of his treatise on "The Form of Energy" and emphasized:

> When Chinese thinkers are unwilling or unable to fix the quality of an energetic phenomenon, the character ch'i inevitably flows from their brushes. And yet unlike our concept of energy, ch'i, whatever the context and absolutely without exception, always implies a qualitative determination of energy.[76]

75. Needham, Joseph, "Hygiene and Preventive Medicine in Ancient China" Clarks and Craftsmen in China and West, Cambridge Press, 1970

76. Porkert, pp. 167-168

Nevertheless, ch'i is somehow generally similar to the concept of "pneuma" but intentionally different in degree from its connotation, particularly in the way that the ancient Chinese symbolized in the earliest documents the "air" as lying between the heaven and earth. There was nothing mysterious in the concept of ch'i, although the term became quite extraordinary at a later date.

The specific content of the chapter "Nutritive hygiene and the vital process" was to integrate the known basic facts on the nature of nutrients and of their metabolism, as a basis for reasoning in the selection of foods and in the compounding of diets in ratios adequate for the nourishment of human beings under specified conditions. The most interesting point made in this chapter is on the function of water in the body, and the reference to acid-base balance for the measurement of the fuel value of foods. An essential point in this chapter on the components of an adequate diet and on the elements of nutrition is that it apparently paved the way for the recognition that some foods were unbalanced in nutrients. Those ideas parallel, though remotely, a modern writer's generalization, when Harold A. Harper says in his Physiological Chemistry:

> Food is the cource of the fuel which is converted by the metabolic processes of the body into energy for vital activities. Calorimetry deals with the

> measurement of the energy requirements of the body under various physiologic conditions and of the fuel values of foods which supply this energy.[77]

Henry E. Sigerist's notion was that manking sought food because their organism required it, which is little different from saying that man must eat to live. Likewise, the Ling Shu Ching devotes a chapter to "The normal person and nutrition 平人绝谷", stating that nutritive substances are extremely important to a human being, amplifying the statement with the observation that the actual process of digestion of food is the regular work of the organism. However, the focus is on the inspection of the abdominal organs especially the stomach and the intestines, with an attempt to explain the appearances with the observation that the gastric air was secreted from the empty stomach or intestines because the empty stomach or intestines contain no active and structive constructive fluids.

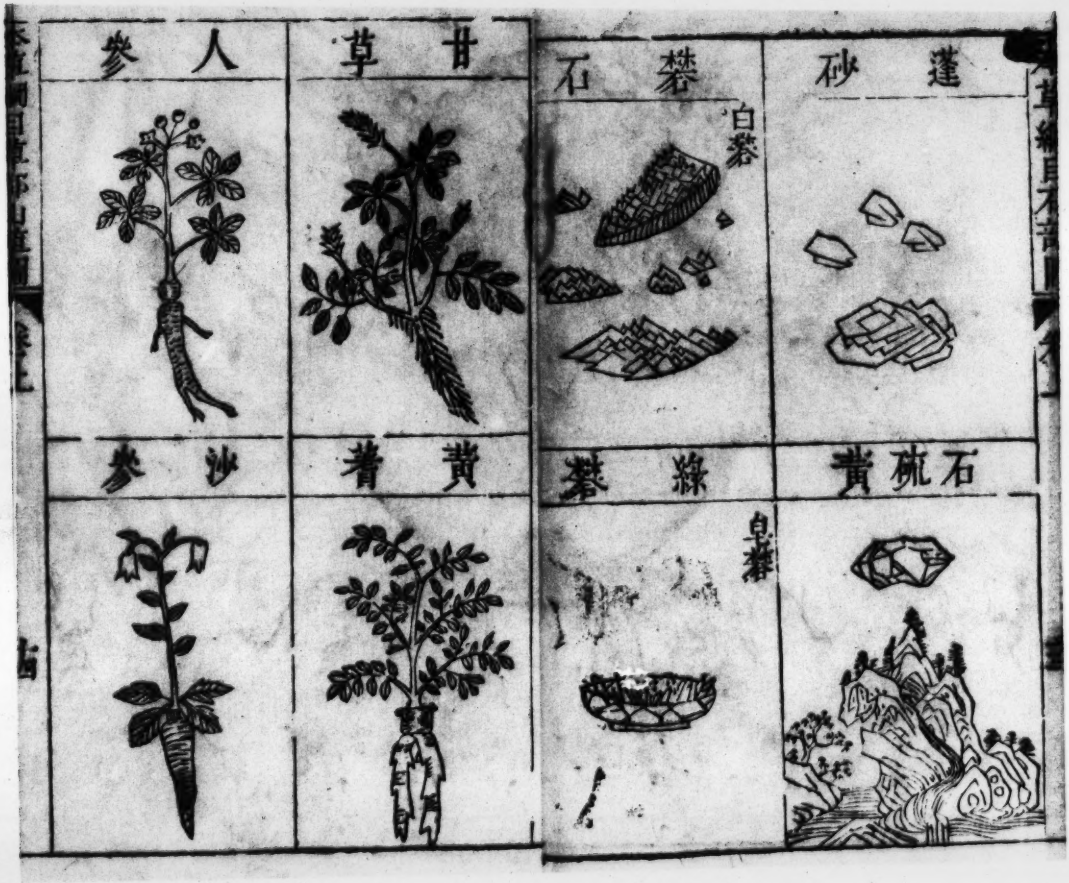
Sigerist assumed that when disease takes hold of the animal organism, instincts manifest themselves in a special way to overcome the lesion and restore health and, likewise, man in disease craved and instinctively found other plants, animal parts, or minerals to overcome illness. Be this as it may, for Chinese remedies it is

77. Harper, Harold A. Physiological Chemistry, Lange Medical Publications, Los Altos, California 15th ed., 1975, p. 505

only possible to trace back their use and the rationale of their use to the earliest time when the ancient Chinese began to speculate on the causal principles of disease.

The causal principles of disease were based on the principle that nature tends to create harmony between the two opposing forces of Yin and Yang, and the evolutive phases between the five elements. Upon accepting such a certainty, the ancient Chinese trusted that in nature there must exist remedies for every sickness. It was the duty of the Chinese physician to discover these healing substances and to determine their efficiency. Consequently almost every plant and animal substance could be used as a remedy. Many were found to possess real medicinal virtues. Undoubtedly, most of the drugs initially used in China were indigenous. However, a large number came later from the tableland of Tibet and areas to the west rather than from the trans-Himalaya mountain ranges. The first herbalist is reported to have been the legendary sage-king Shun-nung (神農) who reigned circa 2699 B.C. Emperor Shen-nung was said to be the patron of medicine and was reputed to have been the author of the classic Pen-ts'ao Ching (本草經) dealing with materia medica. However, there is no positive evidence to prove the relationship of the Emperor Shen-nung to this work, save popular attribution.[78]

[78]Paul Unschuld: Pen-Ts'ao: 2000 Jahre traditionelle pharmazeutische Literatur Chinas. Munchen, Meinz Moos Verlag, 1973, is the most impressive volume to Chinese materia medica



Li Shih-chen's Pen ts'ao Kang mu (1658)
Rare Book collection, UCSF

The Nei Ching, the earliest medical corpus, contains no particular reference to materia medica, except that possessed by the qualities of nutritive material which would function normally in the human health as stated in Lin Shu Ching chapter 56: "Five tastes and human organs 五味" (Translation Four). Nonetheless, it should not be forgotten that diet and its control has been primary in the treatment of the sick. In Greek medicine, for example, diet occupied a position of the greatest importance in the case of the sick.

When it is said that it is the duty of the Chinese physician to discover healing substances and to determine their efficiency, this inevitably refers to clinical experience of the physician as a measure of the therapeutic efficiency of a drug. The Ling Shu Ching shows some knowledge of acupuncture, primitive empirical therapy for the physical signs. However, the Ling Shu Ching, the ancient medical corpus, retains more knowledge of diseases than the mere technique of acupuncture. Needham mentions in his "Medicine and Chinese Culture" that Ling Shu Ching is the oldest catalogue of acupuncture-points; that statement is debatable. In The Theoretical Foundation of Chinese Medicine, Porkert especially treated the ancient beginnings of the technique of "acupuncture" stating:

The origins of theory of the energetic conduits are

> in the darkness of ancient history. From concordant but not congruent in the literature of the late Chou and early Han periods it may be inferred that stone needles (pein-shih 砭石) were used for the treatment of disease in the second millennium B.C., and perhaps even toward the end of the Stone Age. At that stage, peop,e must have known of points at the surface of the body through which certain disease symptoms could be influenced. A systemaic order of these sensitive points, however, is not documented prior to the Nei-Ching, compiled during the third to first centuries B.C. By that time neighbouring sensitive points (foramina, hsüeh) linked with symptoms were connected by lines, the so-called "conduit" (ching-mo). Some of the sensitive points coincide with pulsating points; the conduits were so named because they were thought to conduct the pulsating physiological energy about the body. Their detection by connecting the points is analogous to the way a subterranean watercourse reveals itself by springs sent up through "puncture" in the earth's crust. The sensitive points provide the positive empirical and historically primary data on which the theory is based; the conduits, on the other hand, are only the result symptomatic speculations.[79]

From his research, it is found that there were no congruent documents on acupuncture prior to the Nei Ching. The notion of "sensitive points" or "point of stimulation" must have accumulated by empirical observation of the hyperalgesic points in the human body which seem to be associated with pathological processes as part of the symptomatology. Recognition of those points may have developed over a long period with positive or negative experiences and finally rationalized as the conduit system under the causal principle of disease relating microcoms to

79. Porkert, 197-198

macrocosm possibly long beofre the compilation of the Nei Ching. Although the ancient Chinese must have possessed the faculty by which the conditions or properties of things were perceived through the limited senses, there existed no experiments or observations involving injuries or stimulation to the "nerves" and the notion in the ancient Chinese mind of an essential seat of the intelligence. In the Ionian culture, Herophlius dissected the human body and recognized the brain as the central organ of the nervous system. On the contrary, the ancient Chinese, by physical experience, speculated on the hyperalgesic points and their relations formalizing a "physio-conduit" system which Porkert named the "sinarteriae cardinales" reflecting the combination of the sense of its components.[80]

Speaking of sensitive points, there are two chapters in the Ling Shu Ching concerned with human nervous disorders. It is not really easy to find the description of speech disorder and insomnia in the Chinese medical corpus. The abnormal inability to sleep was described as noxious air infecting the human body and disturbing the regular system or breathing; as well as affecting the natural atmosphere which developed into a storm. The system of breath is described as being irregular so that the individual is unable to sleep regularly. The description seems simplistic,

80. Porkert, p. 199

but it was quite sophisticated for ancient Chinese medicine.

LingShu Ching, chapter 69: "Deepression and Speech disorder 憂恚無言" (Translation Five), treated the defect of the power of expression by speech due to extreme depression or anger. Speech is recognized as a mode of communication by means of sound which stands for something which may be called meaning. Speech therefore, involved in its expressive aspect the production of the appropriate movements of the lipts, tongue, palate, vocal cords, and respiratory muscles resulting in the appropriate sound.

In the Hippocratic Corpus, there are many references to "aphonia" in the Hippocratic writings, usually in the adjectival form "aphonos" (Aphorisms, Epidemics, Sacred Disease, Coan Prognosis). Dr. Arthur L. Benton and Dr. Robert J. Joynt illustrated the term in their "Early Descriptions of Aphaisa" and pointed out:

> The term is used to designate one of the features of apoplexy or epilepsy and also occurs in descriptions of the course of protracted, usually fatal, illness. It is rendered in the English translations of Adams and Jones as 'speechless', 'loss of speech', or 'loss of power of speech'. However, the new translation by Chadwick and Mann usually gives it as 'aphonia" or 'loss of voice', although in some places it is rendered as 'speechless' or 'aphasia'.[81]

81. Benton, Arthur L. & Joynt, Robert J., "Early Descriptions of Aphasia" Archives of Neurology, Vol. 3, 1960, p. 110-206

In their article, Benton and Joynt found that Hippocrates "must" have appreciated the distinction between aphasia and aphonia, and there was no doubt that the physicians of the Hippocratic school observed aphasia or aphasia-like manifestations in patients with cerebral disease or the function. Furthermore, Benton and Joynt also mention among other references such as the symptomatic signs "with paralysis of the tongue", or Pliny's thesis that physiological conditions of aphasia could be occasioned by disease, by causal injuries and occurrences, or by fear. Pliny's passage shows a resemblance to the Ling Shu Ching's description, because chapter 69 in the ancient Chinese medical corpus points out in particular the "speech disorder" which is caused by depression or anger. However, the chapter contains no detailed references technically. Since the contents consist of only the symptom of speech disorder, one cannot properly use the modern terms, such as "aphonia", "aphasia", or even Valerius Maximus' term "traumatic alexia". "Speech disorder" was simply used to designate a particular chapter dealing with the symptom of speechlessness or loss of speech. Incidentally, speechlessness or loss of speech is a symptomatic problem which can be interpreted only on a detailed physiological level. At the physiological level

the meaning of speech is the outcome of the association of sensations which associate the word with other forms of sensation or ideas in the past. The anatomical linkage of neurons upon which verbal meanings depend would join together several regions of the cerebral cortex. Obviously, the Ling Shu Ching would not be able to correlate such details, but the chapter deliberately expresses that the symptom is due to a disorder of the central organization upon which speech is based. Thus, it led to the concept of a disorder of both the comprehension and expression of meanings by means of speech. The speech disorders of this ancient text may not be compatible with the modern usage of neurology, but an important notion did develop in ancient Chinese medicine which is a significant contribution.

It should be proper to discuss the "prognosis" and the "diagnosis" before the discussion of "therapeutics". However, in the ancient Chinese medicine, the "therapeutics" were simple and of relatively little value. On the contrary, the determinations of the nature of a case of illness are most invaluable and contributive to the theory of the "medical axiology" as it is hoped to establish at the conclusion of this dissertation. Furthermore, the chapters on "prognosis" and "diagnosis" in the Ling Shu Ching are clearly correlated to "physiopathology" as will be discussed next. As a matter

of fact, the procedure does not cause any logical problem in induction.

In Ling Shu Ching, there are a few chapters on "prognosis". Chapter 29: "Traditional doctrine 師傳 " taught Chinese physicians to follow traditional doctrine such as "visual image 望 ", "audition 聞 ", and "inquiry 問 " from the patient. Through collected information, the physician should reasonably be able to make a "prognosis". The procedure is very similar to the Hippocratic writings on the art of prognosis, taking into account such famous phrases as "countenance of the patient", "hollow eyes" or "sunken temples", etc.

The ancient Chinese physicians must have paid the greatest attention to the countenance of the patients. The Ling Shu Ching, chapter 37: "Observation on the Five senses 五閱五使 ," explains some of the relationships between the five senses and the internal defects by observations on the patient's five senses. Besides appearance and oral information from the patient, the ancient Chinese physicians would have to correlate the symptoms by means of other factors such as season, climate, or weather conditions. The lunar calendar is the most important reference point for prognosis as well as for diagnosis which was due to the ancient Chinese conceptualization of the correlation between the

microcosm and the macrocosm. The importance of this is described in Ling Shu Ching chapter 44. this has come a long way from the Shang and the Chou culture, as has been demonstrated in Part Two on the "Cultural Postulates". The construction of the Chinese calendar is anunique development in ancient Chinese culture.

In the Ling Shu Ching, there is another chapter which specializes on "prognosis" and on the principle of "countenance" entit "External measurement 外揣 ". The content is identical to the "Traditional doctrine" and nothing more is added.

The diagnosis is largely objective. Little of the patient's past history is taken into consideration. The subjective information received by the physician is more in the nature of prognostic signs than indicating the presence of disease. The most important diagnostic methods of examination are entirely confined to the pulse (切脉) and to the inspection of the tongue (舌苔). In the Yellow Emperor's Classic of Internal Medicine, Veith realizes that the pulse serves not only for the purposes of diagnosis, but also possesses the power of prognosis. Ling Shu Ching, chapter 74: "On the prognosis and pulsation 論疾診尺 ", explores the dual purposes of the nature of the disease condition by examination.

According to the ancient Chinese conception, the human body resembles a stringed instrument whose individual parts (organs) possess their own tone color (pulse of organs). The tone pulse of each organ is the expression of harmony in health and disharmony in disease. In addition to its proper pulse, each organ possesses also an opposite pulse varying with the seasons of the year. Even in the normal condition, the pulse varies in accordance with the influence of the accompanying constellation, the time of the day, the age, sex, and constitution of the patient. The organs under pathologic conditions react unfavorably upon one another and upon the pulse. The sympathy or the antipathy of the pulse upon the dominating organs determines the diagnosis and the prognosis of the case. If sympathetic, the prognosis is considered favorable; antipathetic, it is then unfavorable. Chapter 74: "On Prognosis and Pulsation" insists on the mutual influence between the prognosis and diagnosis, and further emphasizes that the clinical observation should be comprehended from the dual functions of both prognosis and diagnosis. This particular chapter is reminiscent of Hippocratic theories which solve the problem of health and disease, conceptually and speculatively, setting out from observation. Ancient medicine surely possesses great virtue in presenting the healing art

without professional jargon.

Theoretically speaking, ancient Chinese medicine has been highly rationalized in the course and ideals of natural philosophies such as Lao-tzu and Mo-tzu. The healing art also began with "natural philosophy" as Erwin H. Ackerknecht found:

> According to Chinese philosophy and science, the whole universe is divided into two principles, yang (light, male), and yin (dark, female). There are five basic elements (wood, fire, earth, metal, water) associated with five plants, five directions, five seasons, five colors, five sounds, and five organs in the human body. Characteristically enough, music is thought of as the science of sciences. Disease is regarded as a disharmony between the five fundamental organs, a disharmony which is in turn connected with the interference of the plants, seasons, colors, and sounds corresponding with each organ.[84]

His remarks also introduce the most essential notions of the ancient Chinese medicine. Such notions did not develop or progress accidentally, but evolved or accumulated from a long tradition of indigenous cultural origins. Since ancient China was geographically isolated from other countries, the rationalization of ancient Chinese medicine must have been developed by the ancient Chinese without other cultural interruptions. Ancient Chinese medicine is based on the natural philosophy that recognizes the causal principle of disease and regards the natural harmony as the healing principle, such that the essence of the ancient Chinese medicine

84. Ackerknecht, Erwin H., A Short History of Medicine, Ronald Press, 1968, p. 46

may be confined to the notion of "physiopathology". Although, the term "physiopathology" can not be defined in terms of modern medicine, ancient Chinese medicine is unique in describing illness as a physiopathologic condition or as a disturbance of natural forces.

In Ling Shu Ching, the ancient Chinese discovered the general characteristics of the physio-conduit and the form of physiological energy, particularly the healing functions to the human organism, which consist of "physio-conduit" positions and the healing principle of adjustment to an evolutionary phase. The early Chinese medical literature is certainly more concerned with an abstract physiopathologic explanation than as a guide to acupuncture. For the "physio-conduit" system, Ling Shu Ching, chapter 5: "The origin and the Connection 本及 結告 " (Translation Seven) give a clear idea of this primitive concept.

Natural philosophy surely plays an important role in ancient Chinese medicine. There is a chapter especially correlating the influence of natural phenomena with human appearances and behavior in different geographic regions.[85]

Medical thought and the idea of "naure" are very directly and immediately interrelated, and ancient Chinese medicine is not unique in this regard. The central Pythagorean doctrine held that all nature consists of harmony arising out

85. See relevant translation Eight.

of number, then, providing the simplest of all answers, but only by building on an unproved metaphysical basis. An answer on equally uncertain foundations is that given by the Chinese philosophers, who regard the small numbers as the source of all perfection. Whether the Pythagoreans were right or not in the pursuit of numbers will be demonstrated in the last chapter. However, for the coherent relationship between all phenomena under a basic number system should be taken seriously.

It is remarkable that the author of the Ling Shu Ching concluded his treatises in chapter 81: "On Tumors 瘤 疽" (Translation Nine), which exemplifies many types of abnormal growth, their formation and uncontrolled incurable development. Most of the types described appear to be malignant diseases. It is very unusual to find diseases discussed in the ancient Chinese medical corpus which are, as at present, considered incurable. The manuscript describes the nature of the growth and its complication, but the various tumors are said to be due to a digestive problem resulting in differentiation together with the acquisition of increased uncontrolled growth resulting in the formation of metastases.

It will be noticed that the ancient Chinese recognized only the symptoms and the critical course and results of the disease. No details real, or fanciful,are described in the

ancient Chinese medical corpus on disease but there are certain excellent indications as to their concepts of etiological agents or pathogenesis in the work "On Tumors" and some attempt at determining the naure and effects of metabolic carcinogens.

In the Chinese lexicon, "Yung 癰" and "chü 疽" are both discussed under the ideographic radical "chuang 疒" which is etymologically identical to pathos or pathy. Yung and Chü were proper nouns signifying a transient abnormal enlargement or increase in volume of a part or area of the human body, as expressed by "chung 腫" and "liu 瘤". Chung means swelling in the sense of tumefaction, and liu means neoplasm. Although in English "tumor" by derivation simply means "swelling" and not necessarily new growth giving rise to difficulty in translating Chinese terms. The most recent research treatise on cancer called chung liu yen chiu lün wen chi 腫瘤研究論文集, issued by the National Institute of Medicine, People's Republic of China, Changhai, 1962, demonstrates that the term "cancer" should be confined as chung or liu. For medical professionals, the symptomatic signs are more evident than the ideographic sign designating the kinds of swelling. Consequently, the Chinese encyclopedic dictionary (Tz'u-yüan 辭源) depends for its definition

of the term yung and chü entirely upon the original description given in the ancient Chinese medical corpus: Ling Shu Ching.[86]

Besides malignancy, the chapter "On Tumors" of the Ling Shu Ching describes the different nature of yung and chü. If the abnormal enlargement increases in size but is transient, then the swollen area is called yung. If the increase in volume is neoplastic, then the swelling is called chü. Once more, the interpretation of early Chinese terms is involved in problems of the modalities and variables in the use of words. Evidently translation of symbolic modal sentences with variables was customary, but in terms of individual concepts instead of individuals, which may at first appear strange.

It is well known that the description of a language normally begins with the theory of intension and then builds its theory of extension on this basis. The theory of intension of a given language is recognized as providing an understanding of the sentence from words and phrases. The concepts of the theory of intension may be applied if there is sufficient empirical knowledge of medical terminology. In order to ascertain whether a terminology denotes a given concept, one must know the general conditions under which the concept is fulfilled that it may be denoted by this particular

terminology; then one must investigate the concept to see whether it fulfills the condition or not. On the basis of the determined extension, it is not a question of fact but merely a matter of choice. In consequence, what has been described in chapter 81 contained nothing which is remote from the range of choice and designative meaning.

In Part Three, when discussing the concepts of the medical corpus, the intent has been to draw attention to the fact that the ancient medical corpus has retained a great deal more "clinicopathologic knowledge" than the contemporary overemphasis on the mere technique of acupuncture would imply. Furthermore, in the concepts of prognosis and diagnosis, it is indicated that knowledge of "physiopathology" is essential for the understanding of early Chinese thought. However, it is necessary to define the terms "clinicopathology" and "physiopathology". After describing the meaning and synonymy in natural language, it should be easy to define these two terms.

"Therapeutics" is used commonly to denote the art of healing and the treatment of disease. "Clinicopathologic knowledge" pertains both to the symptoms and to that pathological change. Ancient Chinese medicine was rather

inclined to the essential nature of illness, especially the presumed structure and functional changes in the organs of the body, more than to the symptomatic course of disease. Furthermore, the concept of "pathologic knowledge", fanciful though it may have been, played an enormous role in the Chinese medicine, but Chinese medicine did not develop systematically as well as in the Greek or Roman tradition. A combination term consisting of "physis - nature" and "patho - suffering" into a knowledgeable extension is more appropriate to the Chinese cultural tradition. The Chinese "physiopathology" is, in many respects, meaningfully different from modern medical usage, since ancient Chinese did not progress systematically. However, the essential thought process of the ancient Chinese is quite similar to the Greek and Romans in their conception of the notion of disease. Therefore, it would not be incorrect to characterize the type of healing art of an agricultural society by the term "physiopathology" provided us to keep in mind the original derivation of the word from "physis (φύσις), nature, or natural form or constitution.

From the beginning of Chinese medical history, anatomy as a discipline is absent from the thought of the ancient Chinese physicians due to the prohibition of dissection. Anatomical knowledge is simply imaginary and fanciful. Such

a beginning surely provided no firm basis for the advancement of medical knowledge beyond fanciful speculation. On the contrary, Chinese medicine developed into a unique tradition without other cultural interruptions almost to the early part of the twentieth century.

Although the ancient Chinese medicine was established on a foundation of sand, human instincts led the ancient Chinese into a speculative, but nonetheless rational system of medicine. The ancient Chinese recognize the natural environment and the natural change, the law of nature as an analogy extended "physis - nature" into the human body. The ancient Chinese medical corpus, contains full analogies to "physis - nature" as an environment which has reference to human health and human illness. This development might be called "The Chinese style of physiology" recognizing "physis - nature" and its regulations.

The ancient Chinese were convinced that in nature there must exist remedies for sickness. Food and all other substances taken into the human body were thought to liberate the yin and yang virtues, and thus to correct physical disturbances, resulting in the restoration of health. The correlative concordance between natural phenomena categorically and classically must have been conceptualized at its very origin. The record of food testing during the Eastern Chou

period is evidence that indicates the ancient Chinese possessed an enormous knowledge of nutrition and a fair knowledge of the metablic process of the body. Furthermore, the ancient Chinese had accumulated a great deal of knowledge enabling them to prescribe herbal remedies for illness in terms of harmony or discord. This is a central concept derived from clinical experience and therapeutics, namely the "clinicopathologic" experience.

"Clinicopathologic" experience as a term may sound too scientific in this context. In essence it should be connotatively appropriate to the ancient Chinese medicine, since it pertains to both the symptoms and to its cause of disease. This term surely paved the way to the characteristics of "physiopathology".

By such analytic inferences, it was ascertained that the ancient Chinese culture was the predominant fact in its medical development. This statement may be regarded as nonsensical, since medical development in other traditions for the most part also relies upon the cultural attitude and psychology. However, the contention was that the ancient Chinese medical corpus possesses a characteristic feature of the healing art which is an integral part of a soundly evolved internal medicine and contained effective concepts which have played an important part in the evolution

of enlightened modern pathological research. Since the ancient Chinese medical corpus was developed by observation in human research on herbal substances in both health and disease as a method of determining the structure and function of the internal organs of man, the term "physiopathology" is the most adequate descriptive word for such a medical notion. The concept and the ideology of a "physiopathology" certainly persisted in its fundamental form for a great many centuries remaining relatively static from at least the sixth century B.C., or perhaps earlier.

In Part Two, the ideological controversies between the Confucian ideology and the Taoist tradition is discussed. However, the Taoist tradition was said to be only the most fruitful source for the scientific development and the departure of medicine, a statement which will be supported further.

Needham in "Medicine and Chinese Culture" emphasizes that:

> In China there can be little doubt that physicians (i) came from the same origin as wizards (wu). They were therefore connected with one of the deepest roots of Taoism. Far back at the dawn of Chinese history in the second millennium, probably before the beginning of the Shang kingdom, Chinese society had its 'medicine-men', something like the shamans of the North Asian tribal peoples. During the course of the ages these differentiated into all kinds of specialized professions, not only physicians, but also Taoist alchemists, invocators and liturgiologists

> for the curanic religion of the Imperial court, pharmacists, veterinary leeches, priests, religious leaders, mystics and many other sorts of people. By confucius' time, the end of the sixth century, the differentiation of physicians had already fully occurred.[87]

In Needham's opinion, the beginning of Taoist concept arose long before Confucius' time, at which Chinese medicine came into being in a society which was relative unsophisticated.

First, we should recognize that Needham's usage of "Taoist" refers to the "natural philosophers" and not to its later connotation of religious "Taoism". In spite of the criticism of Needham's theory, it is generally agreed that Taoist speculations provided the stimuli for Chinese medical development. Mitukuni Yosida has carefully studied the Chinese concept of nature and treated the Taoist notions systematically. It is unnecessary to summarize Yosida's article on "naturalist doctrine", but his study of the sixth century Taoist pathology of Hu Ying-lin (1551-1602) shows a considerable addition to the Taoist ideology on medicine. Three headings are quite meaningful to this thesis:

(1) Purification and ataraxy as the meditative and ritualistic tradition described on the philosophical plane in the Lao-tzu and Chuang-tzu as the doctrine of ataraxy and non-interference (ch'ing ching wu wei 清淨無為)

(2) Alchemy and related disciplines, including physiological meditative, and sexual techniques that frequently adopted the technical terminology of alchemy (lien-yang 煉養)

87. Needham, Joseph, "Medicine and Chinese Culture" Clarks and Craftsmen in China and West, Cambridge Press, 1970, p. 264

(3) Dietary disciplines, including the ingestion of certain natural substances that conferred immortality fu-shih 服食).[88]

It should be noted here that Yosida's usage of "ataraxy" in the heading (1) is borrowed from the Greek philosopher, Epicurus (341-270 B.C.). In Epicurean philosophy, ataraxia (ἀταραξία) means a life blessed tranquility, imperturbability, with a body free from pain and a soul free from care, which was an essential part of Epicurean philosophy, but it may not be equivalent to Taoist notions of bliss. However, this ideology in its essentials has a long origin. Lao-tzu and Chuang-tzu have described and explored the ideological notions, all of which have had an impact on Chinese medicine, and have shown development simultaneously with the evolution of Chinese culture. Methodologically speaking, Chinese belief in consonance with Taoist philosophies possessed a unique character related to the achievement of spiritual and physical immortality. The human spirit would reach inconvertability through non-interference within the living environment and the physical body through dietary discipline, since the principles of a perfect nutrition preserved the energy for continuing physiological processes. Both inferences were established upon the commanding role which hygiene and preventive medicine play in Chinese medicine, in support of

88. Yosida, Mitukuni, "The Chinese Concept of Nature", Chinese Science, MIT Press,1973, p. 85

which he draws attention to the fundamental principles to be found in the Nei Ching and their elaboration in the Ling Shu Ching as chen chi, "pneuma of food", or "nutritional regimen". Those characteristic features formalized the medical attitude in the healing art of ancient China in showing that Chinese medicine is primarily more concerned with the intrinsic condition than in providing healing assistance. Hence, it is in the totality of these philosophical concepts that the term "physiopathology" is to be understood. In other words, ancient Chinese medicine is more concerned with the causal principles which lie behind an illness and the organic conditions than any factual knowledge of disease. This statement on the suitability of the term "physiopathology" might be debatable among scientists. However, when Cooper and Sivin wrote their "Man as Medicine", they admitted historically a very unsophisticated work while it assumes that doctoring "isolated parts" is modern medicine, forgetful of the great supposed traditionally given by physicians, nonetheless recognize clearly that:

> Traditional Chinese medicine strove to treat the whole person rather than his isolated parts, and to think of him in relation to his emotional sphere and physical environment. This ancient diagnostic and therapeutic approach in many respects anticipates that of the sophisticated modern doctor. But in the criteria that the Chinese physician used to verify effectiveness of a treatment were drastically different from those of modern scientific medicine --

> although perhaps less easily distinguishable from the attitudes and rules of thumb still current in the broad areas of medical application in which doctors are still willing to credit anything that seems to work regardless of the demands of systematic verification.[90]

In their conclusion, they found that Chinese medicine was a rational construction originating from basic conceptions of the universe and its microcosm, man. Data taken from experience were systematically worked into a metaphysical structure that could be neither buttresssed nor destroyed by experimental proof. Disease was thought to be caused by fundamental disruption, due to their external or internal causes, of the flow of energetic ch'i and vital nutriment, which in the healthy body would be balanced, equable, and in phase with the cosmic thythms of the day and year. In a most favorable conclusion, Cooper and Sivin have stated:

> In the meantime comparative study offers tools by which the universal characteristics of medicine may be distinguished from what is merely local or historical accident. The richness, sophistication, and accessibility of the traditional Chinese healing art make it an unsurpassable starting point for building a comparative history of medicine.[91]

To take an optimistic point of view, a discussion of the "silent art" of ancient China supported by translations from the Ling Shu Ching should be highly useful for such a comparative history of medicine.[92]

90. Cooper, William C. & Sivin, Nathan, "Man as a Medicine: Pharmacological and Ritual Aspects of Traditional Therapy using Drugs Derived from the Human Body", Chinese Science, MIT Press, 1973, p. 203

91. ibid., p. 272

92. Transaltions are selected from Ling Shu Ching (1588), Ming edition, Rare Book collection, University of California, San Francisco.

Translation One

Ling Shu Ching, Chapter 46: "The five perceptible changes (第四十六篇 五變)" is translated from the notion of "etiology". From the content it is evident that the ancient Chinese origin of disease can in the interaction between the constitution of the individual and those environmental agents in the context and of Yin and Yang recognize disease as caused by natural factors, such as wind, rain, hot and cold. The sense of Yin and Yang was still rather consistent with the observations and notions of an agricultural community.

Translation

The Yellow Emperor asked Shao Yu: "I have heard that at their inception most illnesses are caused by the wind, rain, cold and hot, which enter the sweat pores of the skin - whether the perspiration goes out or stays in - and even leads to windburn, jaundice, numbness, or existing venom. Unusual weather supposedly causes many types of illness. I would like to know the causal principle. Various patients come down with different illnesses. How can the same natural factor affect people, and yet their illness be rather different? Is it that nature acts through different types of agents?

Shao Yu said: "Take the natural factor of wind which without harmless to most people. Some human beings are invaded by a natural agent that causes the illness. In fact, some human beings might be immune against the invading sickness. It is evident that some human beings are prone to illness, and the natural agents are to blame primarily.

The Yellow Emperor said: "Well! People expose themselves to a storm together and maybe suffer illness at the same time, but then how can their symptoms differ? Can you tell me the reason?"

Sha Yu said: "This is a good question. Let me use the analogy of a lumberman who fells a tree. For example, if the lumberman needs any axe sharp enough to fell the tree, in respect to the comments of Yin and Yang as determined by the condition of the bark of the tree which may be tough or yielding: a tough bark would not be easy to cut while the yielding bark might be split opens easily. In any tree, the quality of the bark varies according to toughness and yielding. The one would not be easy to cut; the yielding would be easily cut. After all, trees differ as to their relative dryness or moisture. Naturally, certain delicate plants grow up early in the spring, but such plants are easily destroyed in a rough breeze or frost.

Other plants growing up under a dry hot sun and having a thin bark will lose their moisture through evaporation. Certain plants again, grow in the shade, the cortex (just under the bark) especially in the case of excessive rain; similarly, a strong gale might break a delicate tree, or autumn frosts and winds destroy some plants. From the examples we realized that the qualities may vary with the situations; and of course, infer from them to the human condition.:"

The Yellow Emperor said: "In what way can one compare the tree to the human being?"

Sha Yu answered: "Well, the tree might be damaged through its branches. If the branches are strong enough, they (the trees) should not suffer any damage. Human illness often arises in bones and joints as well as the skin when the natural factors enter through the sweat pores of the surface.

The Yellow Emperor said: "Some people are affected by an illness, yet there is no perspiration, no sweat. Where is one to find the specific cause?"

Shao Yu answered: "When the human muscles and skin are not in a good condition, the individual is easily affected by disease."

The Yellow Emperor said: "How does one find out

about the condition of the muscles and the skin?"

Shao Yu answered: "In these cases the muscles covering the shoulder joints, the elbows, the thighs, and the knees are not taut enough and well rounded but sunken in flaccid. I am only speaking of their condition as judged by looking at the skin surface."

The Yellow Emperor said: "Some people suffer from jaundice, do we know the cause here?"

Shao Yu answered: "It is the person whose interior organs do not function well who may catch the jaundice."

The Yellow Emperor said: "How can we know whether the interior organs do or do not function well?"

Shao Yu answered: "Generally speaking, in this type of people, their skin is thin, and they have strange movements either looking ahead or to the sides, from deep eye-sockets and low sunken eye-balls. This suggests they are temperamental, moody? This peculiar physical character as shown in the eye movements goes with an increase in body heat. Therefore, they would catch the jaundice. This is only speaking of moody people".

The Yellow Emperor said: "What is the makeup of people who can easily catch a fever?"

Shao Yu answered: "People with a delicate skeleton and thin muscles, easily catch a fever."

The Yellow Emperor said: "How does one examine the

skeleton and the muscular system?"

Shao Yu answered: "The cheek bones are basic in the assessment of the human skeleton. People with large cheek bones have a strong skeleton. By contrast, those with a small cheek bone, have a delicate skeleton. A thin skin covers the muscles and they have no strength in their arms. The skin color is unusually pale. This is a symptom of fever."

The Yellow Emperor said: "How can we explain the symptom of numbness?"

Shao Yu answered:"People whose kin is fissued shows lines and folds and whose muscles are weak may easily suffer from the symptoms of numbness."

The Yellow Emperor said: "How can we explain diminished sensation in the body?"

Shao Yu answered: "In order to know the location of the numbness, one must examine each part of the body, and find out where the noxious air has entered the body."

The Yellow Emperor said:"Some people are sick with indigestion, what causes that sickness?"

Shao Yu answered: "These individuals have a thin skin without smoothness, and the muscular condition appears rough, as a reflection of a nutrition deficiency in the digestive organs. With any natural environment affecting the body, they will be easily sick with indigestion."

The Yellow Emperor said: "You have told me your views regarding the diseases, and I understand their nature. But, I would still like to know more about the relationship between them and the facts of time and season."

Shao Yu answered: "First of all, it is necessary to watch the calendar in order to realize the natural changes (究其年，以知其時). The natural variations in the environment determine the variations in the symptoms. You might call this the correlation between extrinsic and intrinsic factors. It also may be called the regulation through "The Five Perceptible Changes".

*Only four are given: wind, rain, cold and hot,

**Parallel to the Galenic "six non-naturals"

Translation Two

Ling Shu Ching, chapter 36: "Five conditions of the active and the constructive fluids 五癃津液" is translated as a referential chapter for the ancient Chinese archaic notion on physiological knowledge. The ancient Chinese had no basic knowledge of anatomy. The treatise is rather undeveloped and imaginary. However, the concept became the most important foundation for later medical and pharmaceutical developments. The concept of alchemy was obviously begun from this sort of notion.

Translation

The Yellow Emperor asked Ch'i Po: "Water and food enters the mouth and is secreted by the stomach and intestines, so the constructive fluids may be divided into five types of excretions. During cold weather and when in thin clothing, the fluids can be exchanged into urine or vapour; during hot weather and thick clothing, the fluid can be changed into sweat; under emotional state, the fluid can be exchanged into tears; under the condition of indigestion due to some disorder of the stomach, the fluid could be changed into saliva. However, when infected by noxious air affecting the internal organs and blocking up the excretory functions it can cause abnormal accumulation of serous fluid in a body cavity. What would be the real cause for such symptoms? I should like to hear."

Chi'po answered: "All nutritive substances, water and food under the five gestations after entering the body, their nutrient components are distributed to the body from the digestive reservoir. The active and the constructive fluids passing to the different regions are regulated and controlled. The ch'i secreted from the three divisions of abdominal regions which nourish the muscle and skin is the active fluid, and the remaining fluid is the constructive fluid. During the hot weather and in wearing thick clothing, the perspiration fluid will be secreted through the sweat pores on the surface of the skin. But if one at such a time catches cold, then the active and the constructive fluids block up the body which causes some painfulness. During cold weather, the sweat pores should not be wide open, for then the fluid would be excreted through the bladder and pass out as urine. Of the internal organs, the heart is the ch'i center of control for the functions of the other internal organs, such as hearing and vision contained in the head, and the lungs for respiration which is in the central position as a chief among the internal organs. The base of the right lung lies above the right portion of the upper surface of the liver and the upper surface of the smaller left lobe is principally under the heart and the liver [topologically] as an assistant among the

internal organs. The spleen is situated in the upper part of the abdominal cavity on the left side and lateral to the cardiac end of the stomach to serve as a reservoir of blood contributin the structive energy. The kidney excreting the end-products of body in the form of urine and regulating the concentration of the constructive energy. The active and constructive fluids secreted from the internal organs are normally transported up to the eyes but when the individual becomes too emotional, then the lungs extend their volume and the fluid rises up to the eyes producing tears. On the other hand, the lungs control the ch'i force, and when the fluids are mixed with the ch'i, they may be the cause of cough.

When the middle division of abdominal region contains hot ch'i, the heat and moisture may cause over-concoction of the victuals which can cause parasites to exist in the stomach. When the stomach is full and it produces a corrupt ch'i which may cause the symptoms of vomiting of food.

The active and the constructive fluids secreted from the nutrient components, the transformation may be contributed to the bone structure or nourish the meningo-substance, or to supply the muscles.

The sperm is subjected to yin and the ch'i is subjected to yang. In case the yin and the yang are disharmonious, then

the sperm cannot be congulated in the body and will be passed out; thus, it would cause lumbago or leg convulsions. When the yin and the yang are in disharmony, the internal organs are obstructed, the three burning spaces lose functions, and the active and constructive fluids are not transformed, at the same time the nutriments are transmitted to the abdominal regions, but remain in the lower region and pass the residue to the bladder. Therefore, the lower abdominal region is full due to the abnormal regulation of the active and the constructive fluids.

Remarks: Ilza Veith translated "san chiao" as "three burning spaces"; J.R. Ware in his Alchemy, Medicine, Religion in the China of A.D. 320, MIT Press, 1966, translated "san chiao" as "three cookers"; according to the most recent publication 新編中医学概要 1974, p. 15, that "san chiao 三焦" "has no positive definition.

Translation Three

Ling Shu Ching chapter 18: "The nutritive hygiene and the vital process 營衛生會 is a lengthy chapter conerning the nutritional significance of the human digestive system, particularly the distribution and the energy value of foods and the functions of nutrition.

Translation

The Yellow Emperor asked Ch'i-po: "By which factors might ch'i (氣) originate in the human body? On which occasions might yin and yang operate jointly? In which instance is ch'i constructive energy Ying (營) and when is it defensive energy Wei (衛). How do Ying and Wei originate and how can they act together? How do the forces of ch'i differ in old age and youth, and how can ch'i vary its course at night Yin (陰), and in daytime Yang (陽). I hope you will explain these complex matters".

Ch'i po answered: "The ch'i of human energy depends upon the available energy values of food and on a series of digestive processes. As it is evacuated from contigous areas of the stomach, food is broken down into its nutrient components so as to be converted in a special ch'i which is channeled to the lungs, and the other internal organs (五臟六腑). There is an 'incorrupt ch'i' called ying (營), and a 'corrupt ch'i' called wei (衛). Ying moves along the

conduit system; wei moves outside the system. They continuously circulate in opposite directions but they meet only once as they circle the body in a cycle of fifty units of time. The Yin and Yang channels are always arranged in opposite directions around the body, but it is impossible to determine the point of their junction. However, wei normally circulates through twenty-five units during the night and twenty-five units during the day, i.e., a total of fifty units in a 24-hour period. 'Corrupt ch'i' in like manner flows through the yang channel toward the yin; that is to say 'corrupt ch'i' as it circulates in the yang channel reaches its greatest power at noon, when it is called 'double yang'. But when 'corrupt ch'i' circulating in the yin channel, reaches the deepest darkness of midnight, it is called 'double yin'. 'Incorrupt ch'i' circulates within the conduit system from the great yin nervocardialis on one side of the homologous great yin nervocardinalis; thus the great yin leads into the conduit system. 'Corrupt ch'i' moves outside the conduit system from the great yang nervocardialis to the homologous great yang nervocardinalis; thus the great yang channels it along the outside of the conduit system. When both ying and wei have circulated continuously in the human body through twenty-five units of the time they cross once during the 'natural changes' (the 24 hour cycle). From midnight on, that

is from the time of the deepest darkness through the later part of the night until daybreak, when darkness gradually diminishes, and until noon they each reach the greatest power of yang; through the afternoon until sunset that power diminishes and disappears when night begins; thus, ying and wei often cross at midnight when all human beings are asleep. The ying and wei cycles coincide with the 'natural changes'."

The Yellow Emperor asked: "Old people never sleep soundly during the night, and the young do not necessarily rest during daytime. Does any ch'i force determine such differences?"

Ch'i po answered: "Youth possesses a strong blood ch'i. Their skin is smooth, and their ch'i is well regulated. Therefore, they have much energy during the day and a good rest at night. Old people suffer from a decrease in blood-chi vapors. The surface of their skin appears wrinkled, and the flow of their ch'i is obstructed; thus their internal organs can not function properly and need additional supplies. Since ying and wei become disordered, their energies are exhausted and they can not sleep soundly at night."

The Yellow Emperor said: "I would like to know what regulates ying and wei."

Ch'i po answered: "Ying originates at the 'middle abdomen' (中焦), while wei originates at the 'lower

abdomen' (下焦)."

The Yellow Emperor said: "What are the functions of the three divisions within the abdominal regions?"

Ch'i po answered: "At the upper abdominal region the regulation of ch'i begins at the esophagus, travels across the diaphragm, reaches the chest, as well as the axilla, down to the hand, as far as the great yin sensitive point, the sunlight sensitive point in each hand. From this point it goes up to the tongue, and down to sunlight sensitive point of the foot. Normally, during the day, it circulates through twenty-five time units, and during the night, it circulates through another twenty-five units - a total of fifty units for each day and night, as it crosses the great yang sensitive point at the hand."

The Yellow Emperor said: "When an individual is affected by hot air, after eating and before the food is broken down to its nutrient components and assimilates, sweats is secreted through the pores of the skin surface. The sweat is forced out in front, or in the back, or at nearly half the body, and does not seem to follow the routing of wei circulation. What is the reason?"

Ch'i po answered: "This is due to an irregular wind entering the body when the individual's sweat pores are wide open during the hottest weather. Wei (defensive energy) then

then can easily leak out and circulate irregularly. This may be called excessive perspiration."

The Yellow Emperor said: "I should like to hear what you have to say about the regulation of the middle division of the abdomen."

Ch'i po answered: "The middle division of the abdominal region is like the upper division, except that the ch'i is distributed after it has entered the upper division. Its function is to deliver the nutrient components to the lungs and be transformed by the blood. It is the most important division among the three divisions of the abdominal region. The energy from the middle division may enter the conduit system, when it is called ying ch'i (constructive energy).

Both the constructive energy and the defensive energy are provided by the nutriments, and the blood is transformed by the same energy through the middle division of the abdominal region. Although the blood and ch'i have a similar origin, their names are different. Because, in cases where one lost a quantity of blood, then the individual would not possess enough energy to condense the sweat, and the reverse. The blood is the constructive energy, while the sweat is the defensive energy, therefore, if one wasted too much blood or sweat, then the individual must be progressing towards death".

The Yellow Emperor said: "I should like to hear now about the regulation of the lower division of the abdominal region."

Ch'i po answered: "The primary function of the lower division of the abdominal region is to absorb the nutriment and return the nutrient components to the small intestine and simultaneously to pass the urine to the bladder. Hence, all nutriments are passed on by the stomach, and the residue is absorbed in the lower division of the abdominal region by either transforming it into energy or passing it out through the bladder."

The Yellow Emperor said: "Certain people drink wine and pass the liquid with the urine without absorbing it. Why?"

Ch'i po answered: "Because wine has already been fermented outside the body with impure air; thus it can pass through the human body easily and flow out with the urine."

The Yellow Emperor said: "Very good. I have heard about the functions of the three divisions of the abdominal region of the human body, and I realize that overflow of the upper division leaves at the top like a foggy mass of water vapor that is condensed to minute particles spreading above the earth's surface; the middle division is for digestion and the transformation of the nutriments into their nutrient components,

just as the atmospheric moisture is condensed after a warm day and appears during the night on a cool surface; the lower division is to discharge the residue just as the gutter along the side of a road carries off surface water. These explanations justify the term san-chiao (three burning spaces).

Translation Four

Ling Shu Ching, chapter 56: "The five tastes and internal organs 五味" describes the five sensory qualities that are stimulated by the substance making contact with the sensitive surface of the tongue and are capable of distinguishing between sweet, sour, bitter, pungent, and salty, and which comprise the chemical and physical process continuously going on in the human internal organs. These processes lie in the fact that nutritious substances and their special properties enter into reaction with the energy pathway as they reach it for final disintegration and elimination. This sequence of events may be regarded as the fundamental rule for dietary prescription.

Translation

The Yellow Emperor asked: "How are nutriments of the five tastes absorbed by man's internal organs? I would like to hear your exposition."

Po Kao (伯高) answered: "The stomach is the reservoir channeling the nutrients to the other internal organs (五臟). Water and all foods are stored in the stomach; the other inner organs must assimilate the nutrients in order to maintain their function. By their nature the taste qualities correspond to different internal organs. For example, after ingestio, sour foods flow to the liver; bitter foods to

the heart; sweet foods to the spleen; pungent foods to the lung; and salty foods to the kidney. All those taste qualities are assimilated in the human body, their nutrient components become the sources of energy and growth. The nutrient components become the source of body energy and maintenance. A certain amount of residuum will be eliminated from the body."

The Yellow Emperor asked: "What are the processes of ying and wei?"

Po Kao said: "When the food enter the stomach, the nutrient components that nourish the internal organs, flow in two different directions, the pathways of ying and wei.

In addition the great penuma centers in the chest which may be called a 'pneumatic reservoir'. Air normally ventilates through chest cavity in inspiration and expiration. The fundamental principle of maintaining health is the natural pneuma of the universe and the 'great pneuma of the pneumatic reservoir' in the human body. Natural pneuma enters the body and there is an exchange in the discharged 'corrupt air', and a residuum. The person has a weak pneuma if he or she does not eat for a day and a half and is even worse off when he/she does not eat for a whole day. There is an exchange resulting in the change.

The Yellow Emperor asked: "What are the five taste

qualities of food? Will you tell me?"

Po Kao said: "Please allow me to explain this in some detail. Of the five types of grains, glutinous rice is sweet, sesame sour, soya beans salty, wheat bitter, and millet pungent. Of the five types of fruit, dates are sweet, plums sour, chestnuts salty, apricots bitter, and peaches pungent. Of the five types of meat, beef is sweet, dog-meat sour, pork salty, lamb bitter, and chicken pungent. Of the five types of vegetables, sunflower is sweet, scallion sour, betony salty, garlic bitter, and onion pungent.

The five skin colors also correspond to the five taste qualities. A yellow complexion in a patient symptomatic of a spleen disorder and consequently he/she should take more sweet food(s); a blue complexion is symptomatic of a liver disorder and he/she consequently should take more sour food(s); a dark black complexion is symptomatic of kidney disease and he/she consequently take more salty food(s); a red complexion is symptomatic of heart disease and he/she consequently take more bitter food(s); a pale complexion is symptomatic of lung disease and he/she should consequently take more pungent food. Since the symptoms and symptomatic signs are reflected onto the human outward appearances as colors, the adequate taste quality should be prescribed for therapeutic purposes. For example, the spleen patient should take sweet or glutinous

rice, beef, dates and sunflowers; the heart patient should take bitter wheat, lamb, apricots, and garlic; the kidney patient should take salty soya beans, pork, chestnuts, and betony; the liver patient should take sour sesame, dog-meat, plums, and scallions; the lung patient should take pungent millet, chicken, peaches and onion.

By contrast, the five taste qualities also may react unfavorably in the case of certain symptoms. For example, the liver patient should not eat anything pungent; the heart patient nothing salty; the spleen patient nothing sour; the kidney patient nothing sweet; and the lung patient nothing bitter.

Translation Five

Ling Shu Ching, chapter 69, "Inability to speak 厥志無言 "shows the ancient Chinese medical concept of speech and its disorder. The significance of this chapter is primarily that ancient Chinese medicine had deliberately speculated on nervous disorders, while there were no firm basis of "neuron" in ancient China as well as Western medicine until the nineteenth century.

Textual translation

The Yellow Emperor asked Shou-shi (少師): "Human beings sometimes may be suddenly unable to articulate words due to distress of anger, would this be due to the blood-pneuma (血氣) factors? This I would like to know."

Shou-shi answered: "The gullet and the esophagus is the passage transporting victuals into the stomach. The larynx and the wind-pipe is the apparatus to modify the air that is breathed through it. The epiglottis guards the entrance into the superior aperture of the larynx which controls the vocal cords. The mouth and the lips are the oral fissure articulating the sounds. The tongue is a mobile organ most important to speech. The uvula, hanging from the soft palate above the root of the tongue, is the boundary between the oral cavity and the pharynx which is

the most important region for glottic function. The choanae controls the passage of air going through the nostrils. The hyoid bone is controlled for the appropriate movements of the tongue in production of the appropriate sounds. Thus, an individual with abnormal mucus in the nasal cavity has his nasal meatuses blocked, such mucus making breathing difficult. Since the epiglottis is the region for producing sounds, the mucus membrane could change the sound vibrations and the breathing. If the epiglottis is in a normal condition, the individual can breathe normally and produce the appropriate sounds. If the epiglottis is in an abnormal state and breathing is difficult, the individual cannot produce appropriate sounds. In the case of speech disorders, noxious air usually affects the organ, rendering the epiglottis incapable for articulating sounds and organizing them into language."

The Yellow Emperor said: "How does one treat the symptoms of speech disorders?"

Ch'i po answered: "The lesser Yin channel is the region comparable to a leading root up to the tongue and the hyoid bone, which finally reaches the epiglottis. Remove a certain amount of blood between the lesser Ying channel and Jen-mo (任脉) at the sensitive point "Tien-tu 天突 " to release the noxious air out from the body, then the epiglottis will be changed to normal."

Translation Six

As Hippocratic medicine, "seasons" has played an extremely important role in Chinese medicine, particularly for the prognostic judgment and diagnostic decision. Ling Shu Ching, chapter 44: "It is selected as a reference to see how the ancient Chinese physicians anticipated in the natural factor such as the meaning of "seasons".

Translation

The Yellow Emperor said: "With respect to the inception of diseases, they were mostly begun with the extrinsic natural factors: 'dry', 'wet', 'cold', 'hot', 'wind', 'rain', as disharmony between the 'yin' and 'yang', plus the intrinsic conditions, such as emotional disturbance of 'joy' or 'anger' stimulating the digestive problems; thus, we could see the different symptoms and their causes. However, I still do not know the turning point of a disease for better or worse, such as the sick people were mostly comfortable during the daylight, but worse during the evening and particularly during the night. What would be the reason?"

Chi'po said: "Such a situation was actually due to the changes of the four seasons which involved the influences of 'yin' and 'yang' and their intensities of 'inclination' or 'declination'."

The Yellow Emperor said: "I should like to listen to

the correlations between the four seasons' influences to the human body."

Ch'i po said: "In nature, the spring season is the period for the beginning of growth; the summer season is the period for the luxuriant growth; the autumn season is the period for gathering the harvest; and the winter season is the period for storage. If we divide a day into four periods: the morning is like spring; the noon is like summer; the evening is like autumn; and the deep night is like winter. Comparing with the human body, the morning is like the spring that 'incorruptible air' is rising and resists disease in consequence to make the sick person feeling fresh; the noon is like the summer that 'vital air' is mastered and subdues the disease in consequence to make the sick person feeling peaceful; the evening is like the autumn that 'incorruptible air' is astringent and the 'corrupt air' rises against the sick person becoming uncomfortable; the deep night is like the winter that 'incorruptible air' stored in the interior organs and the 'corrupt air' is mastered in the body in consequence to make the diseased person rather serious."

The Yellow Emperor said: "Occasionally, the sick changes may not be followed exactly as what you stated. What would be the reason?"

Chi'po said: "That must be the peculiar disease and

nothing determined by the interior organs; thus, the disease may not follow the normal regulations."

The Yellow Emperor asked: "How to treat the peculiar disease?"

Ch'i po answered: "The good physician should know the natural changes and the harmonization between the 'yin' and the 'yang' to prognosis the disease; otherwise, without the principle, the physician would be a charlatan!"

The Yellow Emperor said: "Good! I heard the therapeutics consisted of five types of treatments. I would like to listen to the details."

Chi'po said: "The human body consists of five interior organs (五 臟), each organ correlated to five cases; therefore, there were twenty-five cases."

The Yellow Emperor said: "I would like to hear the five changes."

Chi'po answered: "The 'liver' is characterized as under the essence of yang, the element of wood, the color value of blue, the season of spring, the music tone of chiao, the flavor of sour, the Heavenly stem of 'chia' and 'yi'; the 'heart' is characterized as under the essence of yang, the element of fire, the color sense of red, the season of summer, the music tone oc cheng, the flavor of bitter, the Heavenly stem of 'ping' and 'ting'; the 'spleen' is characterized as under the essence of yin, the element of earth, the color

sense of yellow, the season of long summer, the music tone of kung, the flavor of sweet, the Heavenly stem of 'wu' and 'chi'; the 'lung' is characterized as under the essence of yin, the element of metal, the color sense of white, the season of autumn, the music tone of shang, the flavor of acrid, the Heavenly stem of 'keng' and 'hsin'; the 'kidney' is characterized as under the essence of yin, the element of water, the color sense of black, the music tone of yü, the flavor of salt, the Heavenly stem of 'jen' and 'kuei'.

The Yellow Emperor asked: "What is the meaning of the changes?"

Chi Po answered: "The winter diseases were mastered by the interior organs such as the storaged air during the winter, the diseases should be treated accordingly to the organs. The spring diseases were mastered by color sense such as the spring growth, the disease should be treated accordingly to the color senses. The summer diseases were mastered by the seasons such as summer luxuriancy, the diseases should be treated accordingly to the seasons. The long summer diseases were also mastered by the seasons such as long summer vital air, the disease should be treated accordingly to the seasons. The autumn diseases were mastered by the flavors as the autumn with astringency, the disease should be treated accordingly to the flavors. The most imporant point is that the physician must pay attention to the correlations

and their regulations."

The Yellow Emperor said: "What might be happened if the clinic notion different from the'five vicera' but 'six bowels'?"

Chi'po said: "Actually, the correltions between the five interior organs (五 臟) and other correlative qualities were not quite mutually corresponded with the qualitative conceptions, particularly the five seasons. It should be necessary to take as consideration of the 'physio-conduits' system which would definitely match the qualitative conception."

The Yellow Emperor said: "What do you mean that the five organs were mastering the winter diseases,the five seasons were mastering the summer diseases, the five music tones were mastering the long summer diseases, the five flavors were mastering the autumn diseases, the five color senses were mastering the spring diseases? I should like to know the reason."

Chi'po answered: "The diseases in the interior organs were caused by the 'ch'i' which was corresponded with the winter storage; the diseases could be observed from the outward appearances which were corresponded with the spring seasoning growth; the diseases were change of circumstances which were corresponded with the luxurious summer growth; the diseases should examine from the voice which were

corresponded with the long summer various changes; and at certain case, one could sick with stomach as the digestive problems due to the autumn harvest with all excellent foods. All symptoms must be treated respectively to the proper sensitive points within the 'physio-conduits' from the symptomatic causes."

Translation Seven

Ling Shu Ching, chapter 5: "The Origin and the Connection 根結 " is a chapter fundamentally concerned with the sensitive points in the "physio-conduits" system. In the context, the term "origin" and the term "connection" are related to the interior organs of the human body and their adaptability to the changes of seasons, particularly under the concept of microcosm within the macrocosm. The chapter presents the locations and the sensitive points in the "physio-conduits" system. The designated names of the sensitive points are mostly made to correspond with agricultural terms such as ch'uang lung = "window-cover" and tai ts'ang = "great granary" and natural sources for agricultural necessities, such as yung chuan = "bubbling spring" and lien chuan = "pure spring". This chapter is an explanation of the morphologic features on the humand body and similar to the "Treatise on the parting and meeting of Yin and Yang" in The Yellow Emperor's Classic of Internal Medicine translated by Dr. Ilza Veith (pp. 125-127)

Translation

Ch'i po said: "The seasonal changes are determined under the cosmological sequence as the climate alteration passes through weather conditions between the cold and the warm, or vice versa. According to the Yin and Yang determining principles, the Yin and the Yang components vary in different

seasons. Hence the phenomena of the Yin and Yang are diverse, the Yin is designated by even numbers and the Yang is designated by odd numbers. Diseases developed during the spring and the summer seasons belong to the Yang, because such seasons consist of more Yang pneuma but less Yin pneuma. Therapeutic treatment should be decided upon for the diseases developed during the season of unbalance components of Yin and Yang. For diseases developed during the autumn and the winter seasons which consist of more Yin pneuma but less Yang pneuma, the therapeutic treatment should be decided upon for the disease which develops during the season of prosperous Yin and declining Yang in circumstances of changing seasons from Yin to Yang, just as water could not fertilize plants when the plants are already prone to wither or die. In general, it is common that disease infects an individual in times of seasonal changes. Without diagnostic treatment, it could become a serious illness through the interior organs. (五臟六腑). Such mistake is due to the unfamiliarity of the origins and the connections of the "physio-conduits" system. The nine essentials of therapeutic treatment are to acquire the complete process of the causal principles and diagnosis. Conversely, knowing nothing about the complete process, there would be no way to discuss the treatments.

The 'great yang' originates at the 'extreme Yin'

(至陰), and is connected to the 'gate of life' (命門). The term 'gate of life' refers to the location below the spinous process of the second lumbar vertebra.[a] The 'sunlight' originates at li tui (厲兌), about one fen from the lateral side of the corner of the vallum unguis of the second toe, and connected to the sang ta (顙大), on the temples.[b] The term sang ta refers to the location on the auricularis superior which parallels the helix at the folded rim of cartilage around the outer ear. The 'lesser yang' originates a chiao yin (竅陰) on the posterior part of the mastoid process of the temporal bone, and is connected to the ch'uang lung (窗籠).[c] The term ch'uang lung refers to the tragus at the front and partly extending over the opening of ear. The 'great yang' acts as opening factor, the 'sunlight' as covering factor, and the 'lesser yang' acts as axis or central point. When loss of function occurs at any of the three points, diseases could infect the individual suddenly. To treat such a sick person the physician should examine the 'great yang' to comprehend the occurrence and condition caused by the disease. When the patient suffers with symptoms of withered skin--as in the normal usage of t'u (癀) which means withered skin--is due to incapability of the covering factor to receive yang pneuma, thus causing the skin to wither. In such a case, the

physician should treat the 'sunlight' point, which is the point supplying the pneuma to the interior organs. The 'lesser yang' point is the axis or central point between the opening factor and the covering factor. When the axis is incapable, the individual will suffer arthritis and be unable to walk. In such a case, the physician should treat the 'lesser yang' point in order to determine the central point into normal. To sum up, the physician should thoroughly understand three main yang sensitive points and their functions for his diagnostic treatment.

The 'great yin' originates at yin pai (隐白), about one fen behind the corner of the vallum unguis at the medial side of the big toe, and is connected to the tai ts'ang (太仓), four inches above umbilicus of the abdominal region.[d] The 'lesser yin' originates at yung chuan (湧泉), one-third the distance from the center to the front of the panta, in the depression which is present when the foot is raised, and connected to the lien chuan (廉泉), middle of the upper border of the body of the hyoid bone above the laryngeal prominence. The 'absolute yin' originates at ta tun (大敦), on the lateral side of the digital phalange of the big toe, posterior to the corner of the vallum unguis, and connected to the yü ying (玉英), on the chest, and reaches down to the shan chung (膻中), level with

the fourth intercostal space and midway between the nipples.[e] The 'great yin' acts as opening factor, the 'absolute yin' acts as covering factor, and the 'lesser yin' acts as axis or central point. The 'great yin' controls the spleen. When the opening factor loses function as the granary (tai ts'ang) without control, one would suffer indigestion or diarrhea. The physician should treat the 'great yin' point to track the food undergoing mechanical and chemical changes. The 'absolute yin' control the liver. When the covering factor loses function as the liver pneuma obstructs within causing organic disease, one would suffer endogenous depression. The physician should treat the 'absolute yin' point in order to balance the arterial supply to the liver. The 'lesser yin' controls the kidneys. When the axis or central point loses function and lower abdominal region is incapable of function one would suffer kidney disease. Thus, the physician should treat the 'lesser yin' point to stimulate the kidney function.

Translator's Notes:

a. In ancient Chinese medicine, the general principles governing the physical examination are founded on a comprehensive understanding of symptoms in which the recognition of sensitive points as the signs is quite essential

b. Sang ta literally means 'great forehead'. It is

an ancient term only recorded in the Ling Shu Ching.

c. Ch'uang lung literally means 'window cover'. It is an ancient term only recorded in the Ling Shu Ching.

d. Tai ts'ang literally means 'great granary'. It is also called chung wan (中 脘), four tsun above the umbilicus or between the umbilicus and the costophrenic angle, of the vessels of conception (Jen mo 任 脈).

e. Yü ying is also called Yü tang (玉 堂), along the median line, and on a level with the third intercostal space. Yü ying is recorded only in the Ling Shu Ching.

Translation Eight

Ling Shu Ching, chapter 64: "Yin and Yang and the twenty-five categories 陰陽廿五人" is related to macrocosm and microcosm. Macrocosm and Microcosm as mentioned by Joseph Needham in his Medicine and Chinese Culture, is a prominent doctrine that refers to the great interdependence between the health of the Chinese people, their land, and the changes of the Four seasons. The Elements are associated -- in "symbolic correlations" -- with many other natural phenomena, in groups of five. In a remarkably systematic way these concepts are applied to the structure and function of the living human body. In this chapter the principles of Yin, Yang, and the Elements are used to characterize the different structures of the human organism and to explain the human temperaments. From the Elements -- wood, fire, earth, water and metal -- inferences are drawn as to particular personality characteristics. Each of these elements are moreover distributed over five categories: tonality, universality, magnitude, dimension and direction. Thus multiplied the elements and categories amount to twenty-five variables. The following chapter is not merely a description of human characteristics and behavior, it is also an elaboration of the Yin and Yang channels of the human body and their aspects

applied templates to the anatomy in general. These templates are used for diagnostic as well as therapeutic purposes. The method is a comparative one based on patterns called socio-musical by Max Weber in The Rational and Social Foundations of Music. The Chinese "pentatonicism" still the basis of their musical system. In his "sociology of music", Weber finds that the pentatonic scale represents a rational selection of intervals from the abundance of acoustic frequencies which play a great role in social (man's) action.

The terms Yin (the dark and Yang (the light) denote respectively the shadowed and the lighted side of a mountain or a river. Yang represents the south side of the mountain, because this side receives the sunlight. But it connotes the north side of the river, because that side of the river reflects the light. The reverse is true as regards Yin. These symbolic aspects extend to the two polar forces of the Universe, which we may call positive and negative. These symbols are metaphysically transferred to the human body, and hence to both is immutability and change. In this chapter, Yin and Yang are not used to refer to acupuncture meridians, but to concepts or templates for the human anatomy and psychology. The essence of Yin and the Yang, as well as of the Elements, has been described in Ilza Veith's The Yellow

Emperor's Classic of Internal Medicine (1949) and in Manfred Porkert's The Theoretical Foundations of Chinese Medicine (1974).

Translation

The Yellow Emperor asked: "I have heard it said that human beings belong to certain aspects of Yin and the Yang. What does this mean?"

Ch'i Kao commented: "Throughout the Universe, which is multidimensional, nothing can be classified unless it is based on the Five Elements. Hence human organisms also fall within this idea. As each element may be distributed at five categories, twenty-five different types may be considered the standard measurement of classification. But the origins of the Yin and the Yang must be excluded from that standard measurement, the characteristics of the Yin and the Yang are different. I know of the particular characteristics of the Yin and the Yang, that is their common five subdivisions: the great Yang (太陽), the lesser Yang (少陽), the great Yin (太陰), the lesser Yin (少陰), and the Yin-Yang (陽明) correlation. But I still wish to learn about the details, about the effect the macrocosmic environment has on the totality of the human organism."[1]

Ch'i po answered: "You have certainly arrived at the critical points of the question. This was my teacher's great contribution, derived from human experience, and this is why

Ch'i Kao could not clearly describe the details."

The Yellow Emperor stood a few steps behind his throne and asked humbly: "I have always felt that when an honest person wants to get some information, but receives no satisfactory answer, this can be called a great loss. On the other hand, when a person does receive a great deal of knowledge but will not pursue the subject, he is considered worthless. This I would be if I did understand the subject and would keep the knowledge to myself.

Ch'i po answered: "First of all, it is necessary to recognize the Five Elements of wood, fire, earth, metal and water in accordance with the Five Levels in order to describe the different human characteristics (temperaments). In the resulting combinations therefore, there will be twenty-five items."[2]

The Yellow Emperor said: "I shall carefully listen."

Ch'i po said: "I shall take great pleasure in explaining the details. The special characteristics of those human beings whose element is wood and, inaaccordance with the 'upper chio' (上角) of the ancient Chinese pentatonic scale (the 3rd) resemble the people who believe in the East. Their physical structure consists of a greenish skin, a small head and a long face, broad shoulders, a strong back, and short body: they are very cexterous. They normally possess high intelligence and

diligence, but suffer from poor health, depression and anxiety. They are able to function quite well during the Spring and the Summer seasons, but suffer from colds and other physical disorders during Autumn and Winter. Those people who belong to the 'upper chio'(上角) classification are linked with the 'absolute Yin'(厥陰) channel. They are also peaceful and content.

The element 'wood' may be divided into four categories in accordance with the acoustic dimensions of high, low, right or left. These musical qualities have a profound influence on human behavioral patterns.

The people who are tuned to the (musical effect of the tonic scale)'great chio' (大角) and its subdivision of upper-left in the Chinese pentatonicism are considered on the 'lesser Yang' channel which is located on the left foot. They are quite reserved in their behavior.

The people who are tuned to 'left of chio'(左角) and its subdivision of the lower-right position are considered on the 'lesser Yang' (少陽) channel which is located on the right foot. These people are given to compromise their relationships.

The people who are tuned to 'greater chio' (钦角) and its subdivision of the upper-right are considered to be on

the'lesser Yang'channel which is located on the right foot. They possess aggressive characteristics.

The people who are tuned to'p'an chico'(判角) and its subdivision of the lower-left position are considered on the 'lesser Yang' channel which is located on the left foot. They are dignified people.

The special characteristics of certain human beings, under the element 'fire' tuned to 'upper cheng',(上 徵) (the 4th) resemble the people who live in the South. Their physical appearance includes a red skin tone, a narrow face, a small head, a fine and not proportioned muscular, well proportioned hand and feet, and a moderately paced gait. They ordinarily have a good disposition, generosity, diffidence, shyness, good understanding, a sense of beauty, impatience, short life, and are subject to accidental death. They are able to function quite well during the Spring and the Summer seasons, but are ill at ease during the Autumn and the Winter seasons, during which they easily become sick. These people who belong to the'lesser Yin' (太 陰) channel are also considered to be truthful by nature.

The element 'fire' may be divided into four categories in accordance with acoustic dimensions of high, low, right or left. These musical qualities have a profound influence on human behavioral patterns.

The people who are tuned to the (musical effect of the tonic scale) chih cheng (質徵) and its subdivision of upper-left in the Chinese pentatonicism are considered on the great yang (太陽) channel which is located on the left hand. Generally speaking their behaviors are rather superficial.

The people who are tuned to shao cheng (少徵) and its subdivision of lower-right are considered to be on the great yang channel which is located on the right hand. They are characterized by optimism and joyfulness.

The people who are tuned to right cheng (右徵) and its subdivision of the upper-right are considered to be on the great yang channel which is located on the right hand. These people are reluctant to show their shortcomings.

The people who are tuned to chih-p'an (質判) and its subdivision of the lower-left are considered to be on the great yang channel which is located on the left hand. They are always happy and pleasantly contented.

The special characteristics of certain human beings, under the element 'earth' tuned to upper kung (上宮) resemble the people who live in the central. Their physical appearance includes a yellow skin, round face, large head, well-built shoulders, big stomach, energetic arms and legs, well-balanced body structure, walking heavily but with short

steps. They normaly possess a peacful mind, tend to be sympathetic, show aversion toward authoritative powers and make good followers. They are able to function well during the autumn and the winter seasons, but are sensitive to warm weather and are easily susceptible to illness during the spring and the summer seasons. They belong to the great yin (太陰) channel and always behave with modesty and trust.

The element 'earth' may be divided into four categories in accordance with the acoustic dimensions of high, low, right or left. These musical qualities have a profound influence on human behavioral patterns.

The people who are tuend to the (musical effect of the tonic scale) great kung (大宮) and its subdivision of the upper-left in the Chinese pentatonicism are considered on the sunlight (陽明) channel which is located on the left foot. They are agreeable and complacent.

The people who are tuned to chia kung (加宮) and its subdivision of the lower-left are considered to be on the sunlight channel which is located on the left foot. They are generally dignified and respected by others.

The people who are tuned to shao kung (少宮) and its subdivision of the upper-right are considered to be on the sunlight channel which is located on the right foot. They tend to be tactful and diplomatic in their relations

with others.

The people who are tuned to left kung (左 宮) and its subdivision of the lower-right are considered to be on the sunlight channel which is located on the right foot. They conduct their daily life with diligence and endeavour.

The special characteristics of certain human beings, under the element 'metal' tuned to upper shang (上 商) resemble the people who live in the west. Their physical appearance includes a square face, white skin, small head, narrow shoulders, small stomach, light weight. They possess small hands and feet and are quite clumsy in their use. They are normally diligent to their duties. They are able to function quite well during the autumn and the winter seasons, but are incapacitated during the spring and summer seasons due to the warm weather. They belong to the great yin (太 陰) channel. They tend to be stubborn in their attitudes.

The element 'metal' may be divided into four categories in accordance with the acoustic dimensions of high, low, right or left. These musical qualities have a profound influence on human behavioral patterns.

The people who are turned to the (musical effect of the tonic scale) greater shang (鈦 商) and its subdivision of the upper-left in the Chinese pentatonicism

are considered on the sunlight channel which is located on the left hand. They are well-behaved and reserved.

The people who are tuned to right shang (右 商) and its subdivision of the lower-left are considered to be on the sunlight channel which is located on the left hand. These people tend to be lackadaisical.

The people who are tuned to left shang (左 商) and its subdivision of the upper-right are considered to be on the sunlight channel which is located on the right hand. They are able to discriminate a thing to a hair.

The people who are tuned to shao shang (少 商) and its subdivision of the lower-right are considered to be on the sunlight channel which is located on the right hand. They are extremely dignified.

The special characteristics of certain human beings, under the element 'water' tuned to upper yu (上 羽) resemble the people who live in the north. Their physical appearance includes a black skin, concave face, large head, prognathous chin, narrow shoulders, a long back, big stomach, hands and feet which exhibit nervour behaviour. They tend to be disrespectful and brash gait, unscrupulous in their relations and violent to the point of death. They are able to function quite well during the autumn and

the winter season, but are incapacitated during the spring and the summer seasons. They easily become sick during the spring and summer seasons. They belong to the lesser yin (少陰) channel. Their behavior is asocial.

The element 'water' may be divided into four categories in accordance withe acoustic dimensions of high, low, right, or left. These musical qualities have a profound influence on human behavioral patterns.

The people who are tuned to the (musical effect of the tonic scale) great yu (大羽) and its subdivision of upper-right in the Chinese pentatonicism are considered on the great yang (太陽) channel which is located on the right foot. They tend to be egotistic.

The people who are tuned to shao yu (少羽) and its subdivision of the lower-left are considered to be on the great yang channel which is located on the left foot. These people are introverted.

The people who are tuned to chung yu (衆羽) and its subdivision of the lower-right are considered to be on the great yang channel which is located on the right ooft. They are straightforward and frank by natural disposition, and also well-behaved.

The people who are tuned to chih yu (桎羽) and its subdivision of the upper-left are considered to be on

the great yang channel which is located on the left food. They are always peaceful in their state of being, and also have a sense of high moral values.

Therefore, one could be easily misled by a superficial examination of features of the body without recognizing the inner characteristics as determined under the principal conceptions of the Five Elements and their different categories as which particularly dominated by the macrocosmic environment.

The Yellow Emperor asked: "What might happen if one overlooked that external feature of the human beings but does not perceive the significance of proper skin color?"

Ch'i po said: "If a person appears abnormal with regards to the principle of the Five Elements and in consideration of his age according to the principles of the Five Elements which act as the bridge between the external features and the five colors, a person is diagnosed as sick. It is quite serious if the individual is not treated immediately. However, if an individual's extrnal features are as ordinary with the respective skin color in a harmonic way, the individual is considered healthy."

The Yellow Emperor asked: "Could you tell me how to determine the 'age criteria' which applies to the relationship between the external features and the skin color?"

Ch'i po said: "This age'criterion' is quite crucial

to human organism as indicated by the twenty-five cases. The standard measurement is begun at the age of seven. Then nine years are added to form each category, such as sixteen, twenty-five, thirty-four, forty-three, fifty-two, and sixty-one years of age. All of these age categories are called 'age factors'. During these specific age periods, one must take special care of oneself, paying close attention to one's diet, and stay of health in order to keep all infections away. The individual should stay away from all unnecessary activities, since these particular years are different from ordinary years of each individual."[3]

The Yellow Emperor said: "You have just mentioned those three main parts of Yang channels which are located whether on the hand or on the foot of human external features. According to the blood-pneuma partition coefficients of the compounds, one could be able to make diagnosis. What would that be?"

Ch'i po said: "The skin and its derivatives play an important part in the regulation of the human body. The hair shaft begins to form at the base of the downgrowth and grows outward to penetrate the skin surface. The various changes of body hair are associated with the compounds of the blood-pneuma partition coefficients. The three main Yang channels can be used for diagnostic criteria.

Translation Nine

"On Tumors 瘧痕 " is the last chpater in the ancient Chinese medical corpus: Ling Shu Ching describing the causal agents in cancer and inflammations and their results in general. In addition to the descriptions of malignancy, the chapter contains the implications in the pathogenesis of certain malignancies. "On Tumors" reveals ancient notions of malignant disease. It is considered rather meaningful for modern research on cancer.

Translation

The Yellow Emperor stated: "I understand that after the digestive process, the nutriments in the form of defensive energy are transported into the upper division of the abdominal region to enrich the flesh and bones, and even extend to the surface of the skin. The middle division of the abdominal region secretes the active and the structural fluids, simultaneously discharges and mixes these with the blood circulating in an action of producing a blood synthesis. If the blood circulation is normal, then the nutriments will be adequately carried through the conduit system--just like--the revolutions of the sun and the moon within the universe according to their set courses, the blood must move in a regular, circulating course. It is a poor therapy to use anti-substances which makes the condition even worse; by similar principle, sickness cannot be cured even

in the case of a good physiological variation. Thus, the successfulness and the anti-substance are primarily directed toward organic harmonies in order to maintain normal physiological conditions. I have actually realized the physiological problems for a long time, but I know nothing about tumors. What are the basic causes for the malignant growth and what are the means to prognosticate the development and its critical period? Can you explain this to me?"

Ch'i po said: "The substances in the conduit system are always circulating in the body which is in agreement with the universal rules guiding heaven and earth. In the universe, when the celestial bodies deviate from their regular courses [of longitude and latitude], the sun or moon undergo eclipses; when where the surface of the earth is irregular, rivers overflow their beds causing drought or flood and the kind of grain does not grow, the roads are rerouted; [even] people cannot meet and be sociable due to the disrupties of traffic. The blood circulation is similar. I am going to explain the similarity. The active and structural fluids in the blood vessels must never be cut off. Just as the celestial and terrestrial processes must be continuously circulating in a normal order. However, when a noxious cold affects the conduit system and causes the blood circulation to become irregular

the structural fluid may be impeded, causing an abnormality which may had to the formation of a tumor. In some cases, the abnormality leads to a rise in body temperature and the skin may supurate due to the formation of pus. If the pus formation is not conclusively treated, then it will damage the muscle; next, it will injure the bone, even down to the marrow of the bone. Unless the abnormality lies in the joint, thus enabling the pus to be release. In another case, the bones and the ascia receive no structural fluid and the disease may not only form a tumor, but enter the internal organs. When disease enters the internal organs it causes death."

The Yellow Emperor said: "I would like to know the nature of tumors; their names and the course of crisis."

Ch'i po replied:"The cancer of the larynx is called Meng Chü (猛疽 violent cancer). Meng Chü is hard to cure. Unless given urgent treatment, it first swells so as to come into an obstruction [in the larynx] and it reaches crisis in only half a day. However, it is possible, during the suppuration to treat it with cold lard and to cure it in three days.

The tumor in the neck is called Yao Chü (夭疽 Rapidly fatal cancer) Yao Chü is large [in size] and colored red and black. It must be treated promptly; otherwise, it may

gradually spread to the axilla. [The tumor] is on the front side which may hurt the hors area, or inside which may harm the lungs and liver. When it affects the lungs or liver, the individual can only live about ten days.

The patient suffers unusually high fever, and has pain in the head and neck region, this is called Nao Shuo (腦爍 Brain Fever). The patient's posture is peculiar, and the neck region is extremely painful. In some cases, the heat penetrates into the interior, the patient becomes distressed and that is a sign of incurable disease.

The tumor in the shoulder or arm is called Tzu Yung (疵癰 carbuncle). Its color is black, it can be relieved by intensive perspiration, and it can not harm the internal organs. If it has been present only four or five days, it may be treated by moxibustion.

If a tumor is developed in the axillary region and its formation is hard and red it is called Mi Chü (米疽 grainy cancer). It can be treated by a long piece of stone coated with lard. In such a treatment, it can be healed within six days. However, in case it is too hard, it must be treated the same as scrofula.

The chest tumor is called Ching Chü (井疽 ulcerating cancer). Its form is only the size of a soy bean. Within only about three or four days, its malignancy may enter

abdominal region becoming an incurable disease. Crisis is reached in seven days.

The breast tumor is called Kan Chü (奸疽 breast cancer). Its form is like a grain or a walnut with blue color. [The patient] may have to suffer a low fever. It may continue for ten years. After death, the breast will become puralent.

The cancer of the flank region is called Pai Tzu (敗疵 flank fissure). Pai Tzu is a gynecologic disease which can be made worse when it is mistakenly treated by moxibustion. A special treatment is to drink "golden-ball" which must be boiled down with 16 pints of water to a residue of less than three pints and [the patient should preferably] sit near the fireplace for perspiration. Then she may recover.

The malignant tumor in the thigh region is called Ku Ching Chü (股胫疽 thigh-bone cancer). It has a rather complex structure with no signs externally but penetrated internally in the bone. [The patient has only] about thirty days until death.

The tumor near the coccygeal region is called Jui Chü (銳疽 piercing cancer). Its form is large and hard. Unless treated fast [the patient must] dies within thirty days.

The tumor is developed inside the thigh that is called Ch'ih Shih (赤施 cancer of the thigh). It must be

treated quickly; otherwise, its crisis is reached in sixty days. However, when the cancer has developed in both thigs, the patient will die within ten days.

The carbuncle in the knee is called Tsu Yung (疵癰 fissured carbuncle). Its size is large but in maintains skin color. It can be a cause of death if it is treated by moxibustion; unless the tumor formation is of a soft consistency.

Malignant tumors cannot be treated when they grow in the direction of the conduit system. If on the yang side of the body, i.e., the back - [the patient can only live] hundred days; if on the yin side of the body, [the front - the patient can only live] thirty days.

The tumor in the shinbone is named T'u Nieh (兔齧 cancer of the shinbone). Its external appearance is red and it is internally injuring the bone structure. Unless it is treated, [the patient will] suffer for a long time.

The tumor in the ankle is named Tsou huan (走緩 slow gait). It is a type of carbuncle maintaining skin color on the outside. It can be treated by moxibustion and is not fatal.

The cancer developed in both sides of the feet is called Sau Yin (四淫 "Excessive Four") the form is similar to the "great carbuncle". It must be treated quickly;

otherwise, it is going to become an incruable disease and is going to be critical up to hundred days.

The swelling in the side of the foot is called Li Yung (厲癰 hard carbuncle). Usually it is not too large in size but it must be treated fast when it develops into large size. If there is no way to treat the carbuncle which is black in color, then [the patient may] die within hundred days.

The tumor of the toe is named T'o Yung (脫癰 naked carbuncle). It is uncurable if it appears red and black in color. It may be cured when it shows no red or black color in its formation. In certain cases, it must be treated by cutting the toe in order to release the malignancy which may be the cause of death.

The Yellow Emperor asked" Master, how can you distinguish the Yung (carbuncle) and the Chü (cancer)?"

Ch'i po answered: "When the constructive energy is blocked in the conduit system, the blood cannot circulate regularly which may cause the effusion of blood of hot quality. This may be the cause of suppuration into the flesh and bones. Since it may not be injurious to the internal organs, it is named Yung."

The Yellow Emperor asked: "What is Chü?"

Ch'i po answered: "The internal hot and malignant cancer sinks through the integumental layer to injure the tendons, the muscle and the marrow, and even penetrates to the internatl organs, interfering with ration between blood and ch'i (氣) which causes the affected part to decay. That is called Chü. The characteristic of Chü can be determined by the layer of skin as it is always dark and hard as the skin of the elephant. The Yung is characteristically of light color and soft to the touch. This is the distinction between Yung and Chü."

癰疽第八十一

黃帝曰余聞腸胃受穀上焦出氣以溫分肉而養骨節通腠理中焦出氣如露上注谿谷而滲孫脈津液和調變化而赤為血血和則孫脈先滿溢乃注於絡脈皆盈乃注於經脈陰陽已張因息乃行行有經紀周有道理與天合同不得休止切而調之從虛去實寫則不足疾則氣減留則先後從實去虛補則有餘血氣已調形氣乃持余已知血氣之平與不平未知癰疽之所從生成敗之時死生之期有遠近何以度之可得聞乎岐伯曰經脈留行不止與天同度與地合紀故天宿失度日月薄蝕地經失紀水道流溢草萱（魚饑切）不成五穀不殖徑路不通民不往來巷聚邑居則別離異處血氣猶然請言其故夫血脈營衛周流不休上應星宿下應經數寒邪客於經絡之中則血泣（音澁下同）血泣則不通不通則衛氣歸之不得復反故癰腫寒氣化為熱熱勝則腐肉肉腐則為膿膿不寫則爛筋筋爛則傷骨骨傷則髓消不當骨空不得泄寫血枯空虛則筋骨肌肉不相榮經脈敗漏薰於五藏藏傷故死矣黃帝曰願盡聞癰疽之形與忌曰名岐伯曰癰發於嗌中名曰猛疽猛疽不治化為膿

Ling Shu Ching

Chapter 81: "On Tumors", p. one

膿不寫寒咽半日死其化爲膿者寫則合冢膏令食三日而已發於頸名曰天疽其癰大以赤黑不急治則熱氣下入淵腋前傷任脉內薰肝肺薰肝肺十餘日而死矣陽留大發消腦留項名曰腦爍其色不樂項痛而如刺以針煩心者死不可治發於肩及臑名曰疵癰其狀赤黑急治之此令人汗出至足不害五藏癰發四五日逞熇之發於腋下赤堅者名曰米疽治之以砭石欲細而長疎砭之塗已(已疑作以)豕膏六日已勿裹之其癰堅而不潰者爲馬刀挾纏急治之發於胷名曰井疽其狀如大豆三四日起不早治下入腹不治七日死矣發於膺名曰甘疽色青其狀如敷實舐舐常苦寒熱急治之去其寒熱十歲死死後出膿發於胁名曰敗疵敗疵者女子之病也灸之其病大癰膿治之其中乃有生肉大如赤小豆到陵鼈草根各一升以水一斗六升煮之竭爲取三升則强飲厚衣坐於釜上令汗出至足已發於股脛名曰股脛疽其狀不甚變而癰膿搏骨不急治三十日死矣發於尻名曰銃疽其狀赤堅大急治之不治三十日死矣發於股陰名曰赤施不急治六十日死在兩股之內不治十日而當死發於膝名曰疵癰其狀大癰色

不變寒熱如堅石勿石石之者死須其柔乃石之者生諸癰疽之發於節而相應者不可治也發於陽者百日死發於陰者三十日死發於腘名曰兔齧其狀赤至骨急治之不治害人也發於內踝名曰走緩其狀癰也色不變數石其輸而止其寒熱不死發於足上下名曰四淫其狀大癰急治之百日死發於足傍名曰厲癰其狀不大初如小指發急治之去其黑者不消輒益不治百日死發於足指名脫癰其狀赤黑死不治不赤黑不死不衰急斬（不同）則死矣黃帝曰夫子言癰疽何以別之岐伯曰骨衛精留於筋脈之中則血泣而不行不行則衛氣從之而不通壅遏而不得行故熱大熱不止熱勝則肉腐肉腐則為膿然不能陷骨髓不為焦枯五藏不為傷故命曰癰黃帝曰何謂疽岐伯曰熱氣淳盛下陷肌膚筋髓枯內連五藏血氣竭當其癰下筋骨良肉皆無餘故命曰疽疽者上之皮天以堅上如牛領之皮癰者其皮上薄以澤此其候也

Ling Shu Ching

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IV. Conclusion: Medical Axiology

It has been claimed that metaphysical statements, cannot be regarded as providing information about the world in the same way that carefully investigated empirical statements are able to do. A more critical approach reflects a change in conceptions of the character of the type of investigation, namely analytic reasoning. Such changes of attitude affect historical analysis in two principal ways: firstly, in making the attempt to present the course of history as conforming to an over-all scheme; and secondly, in providing an opportunity for historical explanation on specific problems raised by what may be referred to as "motivational" explanations. An approach based on a squasi-Kantian historical interpretation or motivational explanation may be exploited as a persuasive form in a characteristically "cause-and-effect" type of explanation.[93]

The exact time at which a series of events took place resulting in the separation of human beings from the original species to become a distinctive biological entity remains unknown. However, we may speculate that when human beings first sought for a rational understanding of the universe they began to think in terms of a wanted model which would resemble the world. This is characteristic of human mentality

93. Hempel, Carl G., "The Function of General Laws in History", The Journal of Philosophy, 1942.

in seeking comprehension, as Aristotle found when he based scientific demonstration on premises ultimately derived from universal truths known to reason or from facts intuitively deduced from sense observation. Artistotle's conception pf the scientific method was an attempted synthesis of the rational with the empirical elements current in the scientific thought of his predecessors and contemporaries, as well as being a part of his own systematic investigations of nature. Aristotle, in the fourth century B.C., summed up the logical outcome of the scientific theories of his predecessors in a doctrine of "reasons", in Peck's discussion, or principles of explanation which are coincidentally almost identical to ancient Chinese theories on the Five Elements or the Yin-Yang composition.[94] The Classical heritage of Aristotelian formulation, as final cause or rational purpose of tangible objects, turned out to be an important guide, despite distortions, for the interpretations of ancient, medieval, and Renaissance scholars in contrast to the Chinese situation in which proto-scientific hypotheses failed to develop from their theories into a practical corpus of knowledge concerning medicine. The Nei Ching, the ancient Chinese medical corpus, probably the earliest work to utilize the yin-yang conception and the recognition of substantial elements as a basis for practical medicine, like Aristotle,

94. Aristotle: Generation of Animals, (The Loeb Classical Library), A. L. Peck, ed., Harvard University Press, 19, p. xlix

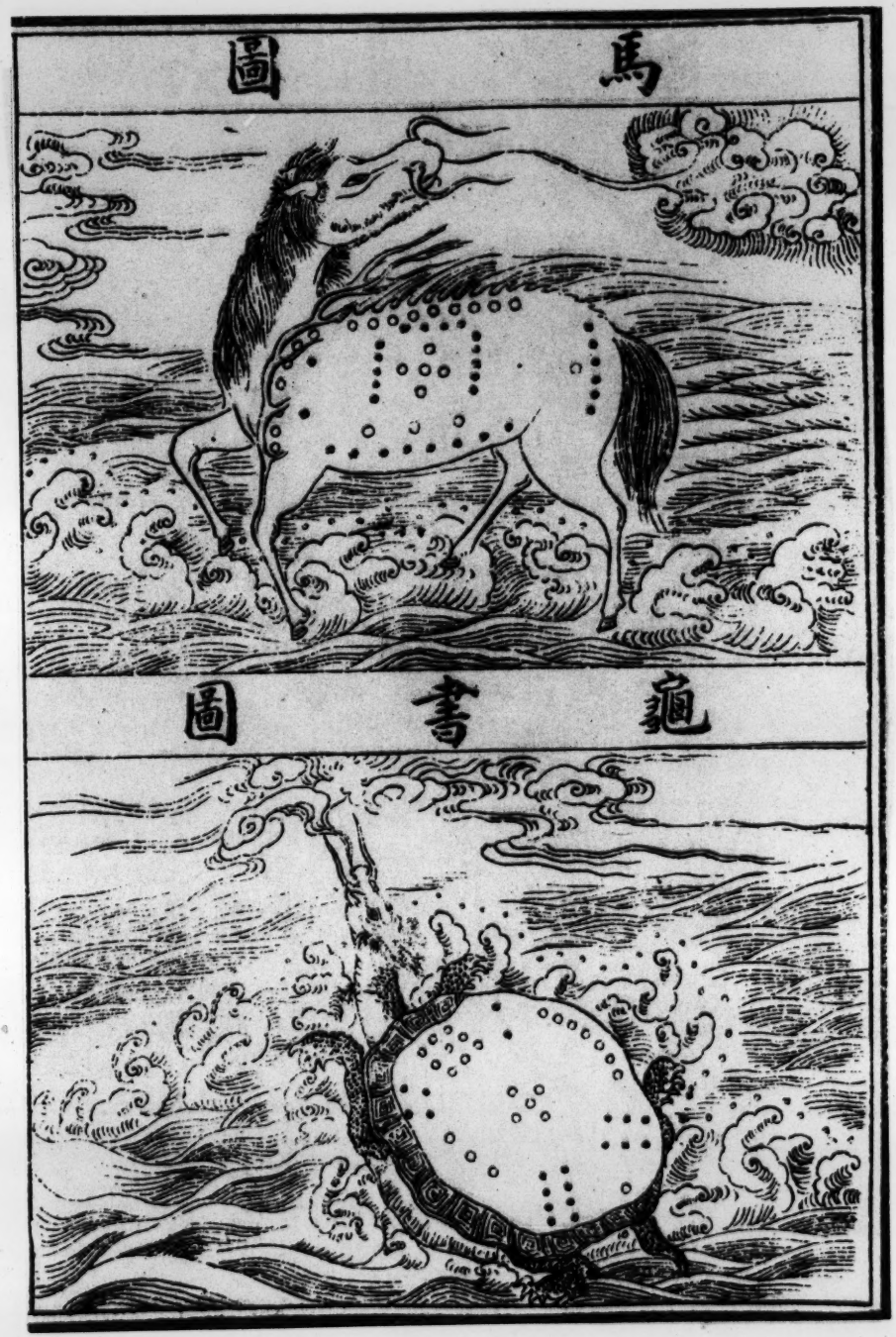
also recognized that the fundamental problem of theoretical biology relates to the properties of living things and their functions. It is obvious that the animated matter must have been a perpetual problem for ancient speculation. The basic difference between the Chinese notion of existence and the Greek concept of life was its metaphysical character. In pre-Socratic Greek science, except for Empedocles and possibly Democritus, life was only gradually and imperfectly distinguished from the motive-percipient consciousness which in turn was variously regarded as either emergent or imposed by postulation and scientific hypothesis. But the ancient Chinese comprehended the human world or creative origin only by direct inspection and aesthetic intuition intrinsically from their agricultural surroundings and their living circumstances. This basic difference has decisively determined the medical procedures between the Greek dynamic and hypothecial approach and the static character of the Chinese approach to nature. The rationalities can be further revealed by the difference in mathematicl concepts between the ancient Greeks and the ancient Chinese. For ancient Greeks, the gift of geometry dominated the basic concepts of a generalized science with its distinctive use of fundamental definitions, axioms, and postulates. The ancient Chinese were only interested in understanding concrete numbers or the conception of concrete

social circumstance as the numerical entities are revealed in the "Yellow River Map" (河圖) and the "Writing from the River Lo" (洛書), which are said to be no later than the fifth century B.C. The "Yellow River Map" and the "Writing from the River Lo" should be recognized as the elementary numbers of Sino-mathematics.[95]

A. Principa Medica

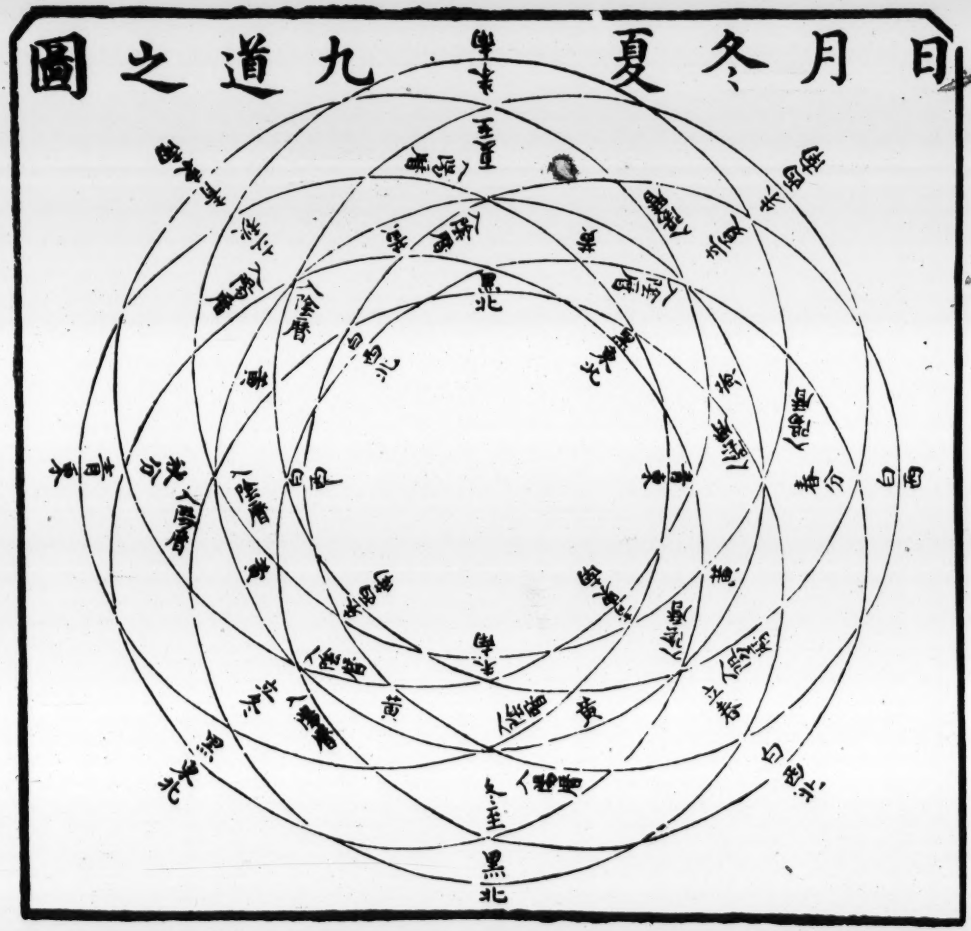
The elementary numbers of Sino-mathematics are primarily a combinational analysis of arrangements of numbers. In pictographic resemblance, both the "Yellow River Map" and the"Writing from the River Lo" conceivably represent nine sets of numeral entities of from one to nine units. According to tradition, the "Yellow River Map" is said to have been carried out of the Yellow River by the dragon during the reign of the Sage-king Fu-shi. According to the inscriptions on the map, Fu-shi designed the eight diagrams. The map is laid out around a square, below which is placed a small circle representing one unit, below which in turn are similar circles of six units. Above are figures representing two and seven units. On either side, there are three units and eight units on the left, four units and nine units on the right, and five units in the center. In the inscription on the "Writing from the River Lo" it is said that during the period of the Emperor Yü (大禹) a turtle carried this writing out of the

95. Cajori, Florian, A History of Mathematics, The Macmillan Company, New York, 1919, pp. 71-77



Above: The Yellow River Map Below: The Writing from the River Lo

River Lo. It enumerated the numbers from one to nine and according to the "Writing from the River Lo", the numbers enabled the Emperor Yü to regulate the direction of rivers. The numbers were arranged so that one was opposed to nine, three on the left opposite seven on the right, the numbers two and four occupying the upper corners with six and eight in the lower corners, and functional five is placed in the center. These figures are first mentioned in the Chinese classic Shu-ching (書經 the Classic of History) and is mentioned again and again in later documents such as Lun Yü (論語 fifth century B.C.). Mo Tzu (墨子 fourth century B.C.), Shih chi (史記 second century B.C.) and in the writings of Chen Tuan (陳摶 ca. 940 A.D.). Thus, the "nine" became the top number in ancient China and "nine" was also introduced into many cultural developments, e.g., the nine imperial ancestral temples (九廟), the nine passages of the body (九竅), the nine palaces (九宮), and the arithmetic processes of Cabalistic tables (九九圖) and the nonary scale. From internal evidence, the central sphere of the "Yellow River Map" is regarded as representing the universe and establishes the idea of the four directions. The "Writing from the River Lo" is obviously later than the "Yellow River Map", because the central five is much more functional than in the "Yellow



The Nine Roads of the Moon, a late Ch' ing representation. The diagram shows the progressive forward motion of the apsidal line (the major axis of the moon's orbit), eight different positions of apogee (represented by the outermost bulges on the diagram) being passed through in 8–9 years (actually 3232·575 days). The 'road' should of course be drawn as one single interweaving line, not as nine separate lines, but that was the old Han tradition.

River Map."[96]

In Part I, under the principal propositions, a statement was made establishing that the first or Shang dynasty extended from about 1520 to 1030 B.C., as determined by archaeological evidences excavated in 1934-35 which revealed the existence of a highly organized society with a king at the head, an elaborate class system and a settled agricultural economy. The chief or capital town was built on a planned site with quadrilateral designs. The highly decorated bronze vessels were also quadrangular in shape. Undoubtedly, the quadrilateral design of the "Yellow River Map" established a dominant pattern which had symbolic importance in the thought of the Shang period.

The Shang were conquered about 1030 B.C., by the Chou, a group of people whose small kingdom lay to the west of Shang. The Chou divided their new lands and gave them as fiefs to local chieftains, thus creating a feudal system. Agriculture developed, schools were established and literature flourished. The family was the basic unit, and religion was widely practised with the worship of ancestors. Schools of philosophy grew, Confucius and Mencius being two of many who expounded on theories of good government. Taoist philosophy also dates from this period. Although the external evidence indicates that the "Writing from the River Lo" appeared during the time of the Emperor Yü, the mathematical notion of the "Writing

96. It is rather curious that Professor Joseph Needham found number "10" when he explains the magic square in chapter 19: "Mathematics" in Science and Civilization in China, vol. 3, p. 57

from the River Lo" must have been a most dominant force which preoccupied the thought of the Western Chou period (1030-722 B.C.) and the Chun Chiu period (722-480 B.C.). The Chou capitals of Hao and Lo-yang were near the River Lo which lies in the modern Ho-nan province. Contrasted with the Shang dynasty, the central "five" of the "Writing from the River Lo" provided the axis in all conceptual operations reflecting the wholeness of the nation and so symbolized the feudal system in which neighbouring states become liegemen. Furthermore, the concept of Li (礼), mentioned in Part II, is a cultural postulate of ancient China which might be analyzed as a by-product or accessory to the Chou society and was the preliminary basis for later more fully developed social customs.

It is not unlikely that the "Yellow River Map" is the first primitive notion of Chinese "a priori" knowledge dating from the Shang dynasty. The perception of tangible objects as numerical entities was a great advancement for a primitive society. It was not until modern times that mathematics has emphasized "intuitionism" as being the reality whereby entities perceived through intuition make known countability. Intuitionists however, claim that the notion is derived from the philosophy of Immanuel Kant (1724-1804 A.D.)

In an analytical sense, one recognizes through the

"Yellow River Map", the numeral entities are not only in the realm of, but also recognize the differentiation of odd and even numbers as designated by the unbroken line (———) and the broken line (— —) in the I Ching. These must have originated from the concept by divination as "yes" (unbroken line) or "no" (broken line). The notion of countability was intuitively "concrete" which is in essence contrary to "abstraction".[97]

As mentioned in both Part I and Part II, the great Chou Empire, founded in 1122 B.C., fell in 711 A.D., when the Imperial domains were invaded by barbarians. The Emperor Ping Wang (平王) fled to the Eastern capital in 770, thus beginning the Eastern Chou dynasty which lasted until 256 B.C. In the glorious days of the Chou empire, the Emperor as the "son of the Heaven" reigned supreme over most states and the feudal hierarchy was governed by rules prescribing inter-class and intra-class relations. However, alliances of states for defensive and aggressive purposes existed during the Chou dynasty. Alliances are actions which normally refer to a close association for a mutual purpose, as well as in connective relations in linear functions. Nonetheless, connection is a somewhat more advanced notion of"a priori" knowledge. To say that the "Writing from the River Lo" was formulated during the Chou dynasty is beyond

97. cf. Wilhelm, Richard, The I Ching, Princeton University Press, Princeton, N.J., 1967, p. xlix

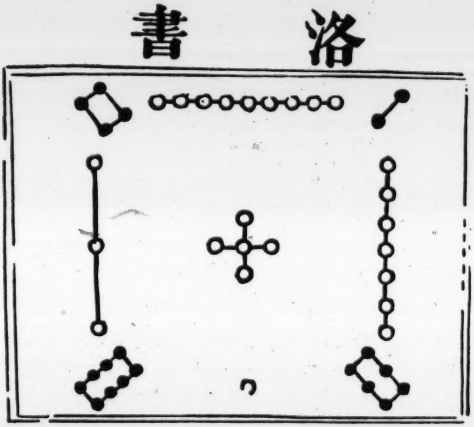
question. Incidentally, the capitals of both Western and Eastern Chou were established near the River Lo, a tributary of the Yellow River.

In the "Yellow River Map", the figures revolve around the "central five" so that in any chosen direction, the designator is expected to total 20. In the "Writing from the River Lo", the "central five" acts as a coordinate axis and the designator automatically arrives at a total of 15. The "fixed value" to the designator as denominator rules medical performance in ancient Chinese medicine.

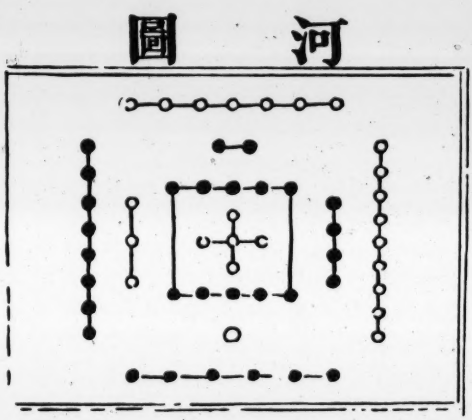
In any state of human society, one of the earliest applications of knowledge of numbers is for measurement and for the ancient Chinese, concrete numbers provide the means of measurement. This is also inclusively true in ancient Chinese medicine.

In the Graeco-Roman tradition, the value judgement for medicine is derived from ancient Egyptian mythology. The abstract notion is not accidental but an inheritance. Surprisingly, the superscription symbol "R" in the heading of modern prescriptions has its origin in the Egyptian myth of falcon-god Horus, the ancient Egyptian god of the Sun, represented as having the head of a hawk. Although the superscription symbol "R" is generally thought to stand for the word "Recipe", it is actually for the corn measure in

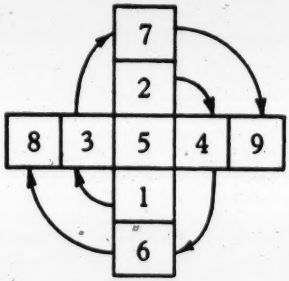
The Writing from the River Lo

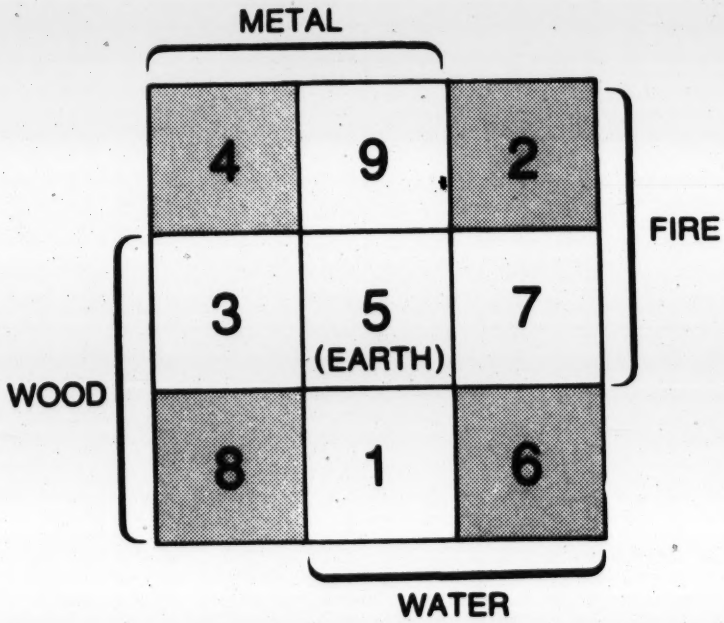


The Yellow River Map



4	9	2
3	5	7
8	1	6

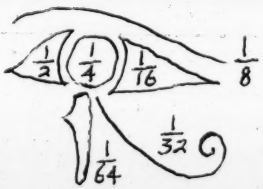




The* Lo shu *magic square of ancient China

accordance with the ancient Egyptian myth "wdjt eye" used to represent fractions.

Positions of "wdjt eye" are used as quantitative measures signifying the factions by halving. The sign was used for 1/2, for 1/4, for 1/8, for 1/16, for 1/32, and for 1/64, which totally form the "wdjt eye".



The eye is often depicted on monuments represnting the eye of Horus torn into fragments by the wicked god Seth. Later, the ibis-god Thoth miraculously "filled" or "completed" the eye, joining together the parts, whereby the eye is made whole and called "the sound eye".

The dyadic system was later adopted by the Greeks and as a symbol which implies the necessity of care and caution inquired for accurate fractionation.[98]

The ancient Chinese, however, conceived no similar quantitative notion for measurement of the "parts" by a dyadic system but perceived images for the state of change in the injured creatures of a total universe. Lao-tzu, the sixth century natural philosopher said: "Tao produced the One, the One produced the Two, the Two produced the Three, and

98. Sir Gardiner, Alan, Egyptian Grammar (2nd ed.), London, pp. 196-199

the Three produced the myriad phenomenal things," which emphasize that the basic unity is Tao and the Tao is "one". The "one" is, however, the origin of the myriad things. Alternatively, "one" contains basic unity, two contains two units, three contains three units, and so on, until a myriad contains indefinitely large numbers. Conceptually this is no partial notion, but a perception of real numbers. The numeral notion long dominated the Chinese medical performance.[99]

Although Chinese medicine and Graeco-Roman medicine are different ontologically, the criteria for truth and reality are essentially the same. This statement needs no further clarification, since their ideals of rationalities are quite similar, particularly the sensibility of medical knowledge as can be easily verified from medical documents.

For the ancient Chinese, an agricultural people dwelling near the Yellow River, the products of the natural world grew freely from the earth. The products of culture were primarily brought forth only after mankind had cultivated the fields. Nature is the embodiment of the totality of growth. Alternatively, culture comprises whatever is produced directly by proposing values or whatever was at least intentionally fostered for the sake of value. Thus "value" is always attached to cultural objects. The presence or absence of

99. Lao-tzu, Tao-Te-Ching

relevance to values may serve as a reliable criterion for distinguishing the sensible entities. The legendary myths of whether the "Yellow River Map" or the "Writing from the River Lo" are the primary origin resulting in the growth of Chinese achievements of the numeral theory of logarithms is immaterial since both utilize quantitative judgement in terms of the "more or less" in the valuation of natural objects. Although pure quantity is unreal and its "extension" contains no physical reality, so the "concrete" entities of the real world or their uniqueness are of importance in concept-formation.

In ancient China, the causal principle of disease is contained not only in the yin and yang, but in the great yin, and the great yang or in the lesser yin and the lesser yang. The determination of healing powers derived from the Chinese notion of value-judgement distinguishes the system from that of the ancient Greeks. However, in physical reality, the ancient Chinese and the ancient Greeks are somewhat similar. For the ancient Greeks, an abstract notion has preponderated in establishing the Graeco-Roman tradition; for the ancient Chinese, concrete number has predominated in forming medical behavior and practice. However, all have been regulated by the "cause-effect" notion of "a priori" knowledge. The determination is generally conceived by both value extension and value intension under the circumstances of the fabricated

order of the social life which formulates the medical tradition. A medical tradition thus must be possessed of its distinctive characteristics as a unique pattern leading to medical development. This inference should be called "medical axiology", since the minds of ancient people were certain of their perceptions of "value" which were utilized as an axis for thinking about the healing process just as they were in metaphysics or aesthetics. By establishing a theory of "medical axiology" it is possible to analyze ancient medicine more systematically. Such an analysis is not restricted to the Nei Ching, but includes the Hippocratic corpus as well.

In ancient medicine of neither the Nei Ching nor of the Hippocratic corpus are the causes of disease thought to be associated with the living environment of physical nature. The ancient Chinese recognized not only the energy of the sunlight as of importance to agriculture, but also found that exposure to the sun had curative value except when extreme, and then it had harmful effects on the human body. The extremes of weather were conceived as acting in nature to depolarize the excessive power exerted by one or the other; thus the contrast in the natural powers are mutually composed. The yin-yang interaction was developed from a consideration of the tension originating in their respective powers.

The Hippocratic corpus also discusses the natural powers, drawing a comparison between the world and the human body. It is stated that it is the part of the sun to supply the original heat and the warming of the body by warm water is compared to the warmth provided by the sun. The corpus likewise finds extremes in the action of the sun. In Regimen II, Hippocrates states: "The sun and fire dry out for this reason: being hot and dry, they draw humidity or water out of the body." In Regimen III, he states further: "One should guard oneself against the sun and the fogs, as much in the morning as in the evening." In Internal Affections, one finds that "Coxalgia for the most part is produced in this way: on exposure to the sun for a long time, overheats the hips and the moisture which is in the joints is dissipated by the heat." Hippocrates' discussion of the nature of disease is based upon a consideration of the relationship between causes and cure. Air is considered as the most powerful force in the world. On Winds (Breaths), he elaborates: "The breaths are called wind in the body and air outside the body." He goes on to say: "The whole interval between the earth and the sky is filled with breath (pneuma). This pneuma is the cause of the winter and of the summer: dense and cold in the winter, in the summer, moist and tranquil. Likewise the course of the sun, of the moon and of the stars is an effect of the pneuma;

for the pneuma is the food of fire and fire deprived of pneuma cannot survive, so that the eternal cause of the sun is supported by the air which is itself everlasting." this notion is in fact vdry similar to the basic speculations underlying the ancient Chinese medical corpus.[100]

The Hippocratic treatise discusses the fundamental idea that health is dependent upon the proper adjustment between food and exercise. However, the were those who said that nourshment is superior to exercise. Thus we find in Regimen, the Pythogorean-like statement that: "All things divine and human are connected, alternating above and below. The day and the night have a maximum and a minimum, as the moon has a maximum and a minimum; fire and water have their ascendancy; the sun has its longer and its shorter period. All is the same and not the same." This idea is almost identical to the Chinese notion of the force to be understood for preventive medicine as has been postulated in Part II.

The parallel documentary references from the Hippocratic corpus are intended to show that ancient Chinese speculations on medical processes are not accidental or naive, but derive from a healing art which is independently emerging from the Yellow River culture. The fundamental interpretations of the phenomena of disease are quite similar to the Hippocratic and,

100. cf. The Genuine Works of Hippocrates, tr. from the Greek by Francis Adams, Williams & Wilkins, Baltimore, 1939 (1st ed. 1849)

though similar are not necessarily coincident. In fact, the causal recognitions of disease are determinate in both medical traditions and are handed down as an intellectualism which is fundamentally rooted upon mathematical notions which Lancelot Hogben summarizes in the phrase "Mathematics, the Mirror of Civilization". This phrase expresses inherently in its own language the foundations of the physical law through which indefinite thoughts are transformed into specific theories. In remote ages primitive people learned to count; then to measure; and finally to calculate. This most distinctive characteristic constitutes the primary basis for a "medical axiology" or value system which appropriately should be explored in order to disclose the intensive problem of "how" a traditional medicine could have been developed into a system which we recognize as being essentially Chinese.

By definition, "medical axiology" is an evaluating methodology to determine the occurrence of an event of human physiology in a certain place and at a given time under the determining conditions of qualitative measure from which to draw a value-judgement. The method is not merely applicable to ancient medicine, but has relevance to modern medicine as well. In the same way that ancient medicine is an intellectualism, so modern medicine is also an inquiry into the relationship between causes and effects as regulated by the determining conditions. The formal proofs can be deduced from the factual inferences.

B. Medicine and Culture

For ancient Chinese medicine, the Nei Ching is the oldest medical corpus dating approximately from the fourth century B.C. The physical world of China during the fourth century B.C. was seen in terms of an earth spherical shape, since indigenous forces compressed it equally from all sides towards the center. It was claimed that the earth in accordance with its nature produced effects without cause or from such causes as could be recognized by the human mind. The heavens, however, were removed from the center by the inexpressible forces of invisibility. On the Sun in the heavenly order is worth mentioning, because the ancient Chinese found the miracle of the Sun intervening between human sensibilities and outer subjectivities. The physical world of a spherical earth provided the basic elements for the further speculation in ancient Chinese medicine.

By the fourth century B.C., the countable set of denumerable entities in one-to-one correspondence with the positive integers had reached the number "nine". The countable set was then carried or extended in the sense of countability to infinite numbers, establishing continuity. From a spherical earth, the physical worldwwas recognized as proceeding from all sides to the center forming an axis about which all parts of the physical structure rotate. In the "Yellow River Map", the sides are square. The odd numbers

and the even numbers are laid sequentially along the four sides rotating around a central five. In representation, the odd numbers and the even numbers by contrast are opposed in position. However, in the "Writing from River Lo", an octagon is utilized for the basic layout. The central five now acts functionally as an axis. This mathematical notion is fully reflected and symbolized in the Nei Ching.[101]

In the Ling Shu Ching chapter 77, the medical corpus follows exactly the configuration in the "Writing from the River Lo", its octahedrite illustrating that all parts proceed from macrocosmic changes and from it the causes of disease affect microcosmic nature.

As in the "Writing from the River Lo", the configuration of the Ling Shu Ching presupposes the presence of the corresponding designate numbers in each assigned region. "More of less" became the quantitative measure of the natural factors influencing the humand body; such as season, direction, climate, element, which are all natural agents affecting the internal organs of man. The configuration is axiomatically conceived as representing the aphoristic principles of clinical facts. Alternatively, whatever the quantitative measure and the assigned region provide a general conclusion which can be proposed as proving the basis upon which to evoke aphoristic

101. In the Nei Ching, Su Wen consists of eighty-one chapters, Ling-shu also consists of eighty-one chapters. Eighty-one is nine times nine.

principles. This shows conceptually that the ancient Chinese considered disease to be a part of the order of nature or a natural event which follows natural change. To conquer disease or to understand illness, one must, therefore, associate it with other natural events, such as season, direction, climate, or element, in order to make a clinical judgement. These are the determining conditions derived from "a priori"knowledge from which Chinese "clinicopathology" is established by correspondence.

Utilizing the countable set, the Ling Shu Ching consequently contains eighty-one chapters which utilize the number "five", such as the "Five noxious airs 五邪 ", "Five disturbances 五亂 ","Five conditions of the active and the structive fluids 五脏津液", "Observations of the five senses 五閱五使 ", "Five perceptible changes 五變 ", "Five colors 五色 ", "Five tastes and five human organs 五"味 ", "Five restrictions 五禁 ","Five correspondences to tones and tastes 五音五味 ", Interestingly enough, there is also a chapter designating twenty-five types of human characters (陰陽#五人) which is five times five. There is certainly no proper reason why five should be regarded as the key number for classications. In fact, any number within the countable set could have been the number used in classification.

However, "five" is the only odd number which acts as an axis in both the "Yellow River Map" and in the "Writing from the River Lo". In the "Writing from the River Lo", five also acts functionally. Unless there is a "five", then no fixed designator can be expected. Thus, a central value becomes the balancing factor in "recipe" of the Chinese materia medica when its content is classified udring the fifteenth century A.D.[102]

In his article on "Scientific Method in the School of Padua", John Herman Randall, Jr., points out that:

> Fundamental also was the close alliance between the study of Aristotle and the study of medicine. At Paris, the Faculty of Theology crowned the Sorbonne; at Padua the Faculty of Arts led only to that of Medicine, and Aristotle was there taught as a preparation, not for an ecclesiastical career, but for the study of medicine, with a consequent strong emphasis on his physical writings, his natural history, and his scientific methodology. A physician's Aristotle is bound to differ from a theologian's. The teachers wrote no theological works, no commentaries on the Sentences. They normally held medical degrees themselves; they applied Aristotle to medical problems, and to questions of method arising in medical science; they interpreted him in the light of the best medical writers of the Greek and Arabic traditions.[103]

Randall's view of the scientific method of Padua, refers in particular to Aristotle. His essential point is the training step by step of gradual elaboration of the Aristotelian method in the light of medical tradition. In addition to the Hippocratic corpus, the Aristotelian conception of scientific method necessarily was the first to be

102. The Ling Shu Shing; chapter 20; chapter 34; chapter 36; chapter 37; chapter 46; chapter 49; chapter 56; chapter 61; and chapter 65.

103. Randall, John J. Jr., "Scientific Method in the School of Padua", Roots of Scientific Thought, ed. Journal of the History of Ideas, Basic Books, Inc. 1957, p. 145

elaborated. Hence Aristotelian methodology is essential for the formulation of the "medical axiology".

Aristotelian considerations of method are reflected in a doctrine which, where appropriate to subject, depends upon making distinctions and criteria that are determined by examination of the logical conditions of statement and inference. The symbolic formuation of the inferences and conclusions is inseparable in Aristotle's scientific investigations from the structure of the doctrine. That structure in turn reflects the nature of things and causes which the principles of inference express. Therefore, the examination is an integral part of Artistotle's investigation of the nature of things and in the determination of the parts and the distinctions of his logic. In fact, they formulated Aristotle's Ladder of Nature and Aristotle's conception of the Greek humoral theory and his selectors of the principal four qualities of the elements and the corresponding four humors. This theory, later writers combined with the somewhat similar Hippocratic doctrine which held that the body is composed of four humors in varying degrees of structure. In his A Short History of Medicine, Charles Singer says: "Some of the Hippocratic physicians had associated excess of the humours with various types of bodily constitution."[104]

In ancient Greece, the Pythagoreans invested particular

[104]. Singer, Charles, A Short History of Medicine, The Oxford Press, Oxford, 1962, pp. 46-47

numbers with extraordinary attributes. One becomes the essence of things and is an absolute number. Hence it is the origin of all numbers and so of all things. Four is the most perfect number, and in some mystic way conceived as corresponding with the human soul. Philolaus believed that five is the cause of color, six of cold, seven of mind and health and light, eight of love and friendship.[105] In Plato's works are evidences of a similar belief in religious relations of numbers. Even Aristotle referred to the virtues of numbers. These mystic speculations of the ancient Greeks are quite similar to those of the ancient Chinese, Furthermore, it is understood that long before Aristotle and Hipoccrates, it was held that the lements, the humours, and those qualities were combined in a complex system. In relation to the qualitative aspects of disease and of the physiologic action of drugs, the doctrine of the four humours provided a general biochemical conception of human physiology. The whole constituted the "humoral pathology" as applied to health and disease and the technique through which the proper adjustment of imbalance of the different components could be made. These beliefs bear a strong resemblance to the physiopathologic doctrine of Nei Ching.

The complex system of humoral doctrine was further elaborated by Galen of Pergamum (130-201 A.D.). His most famous physiological theory is that of the blood flow, which

105. Cajori, p. 55

dominated medicine up to the time of Harvey. Galen was a first-rate anatomist and physiologist. Unlike the therapeutics of the Hippocratics, Galen's therapeutics were polypharmacy, but it is not recogznied that his "Galenics" may be condemned together with the arithmetic achievement of his contemporary Nicomachus.[106]

In their History of Chinese Medicine, Wang and Wu found that Chinese medicine probably began with the Han dynasty (202 B.C. - 220 A.D.); a statement which seems to be true. At least, after the time of the Nei Ching, there exists no medical document until we meet the great physician Chang Chung-ching (142-220 A.D.).[107] He is often regarded as the Sage of medicine and the Chinese Hippocrates. He is remembered to all posterity by his Shang Han Lun (Essay on Typhoid 傷寒論) which is one of the most important medical classics after the Nei Ching. Chang's Shang Han Lun deals not only with typhoid, but also with a number of other diseases. No biographical record of this great physician exists in the Han dynastic history. His name appears for the first time in the Annals of Literature of the Sui dynasty (581-618 A.D.) where it is mentioned that his work was edited by Wang Shu-ho (210-285 A.D.), the authority on the pulse. However, in addition to his famous Shang Han Lun, Chang Chung-ching was well-known for his

106. Singer, pp. 59-66; Ackerknecht, p. 78

107. Wang and Wu, pp. 31-33

prescriptions which are called Chang Chung-ching's Prescriptions (張仲景方).[108] His contribution on prescribing is based upon the systemization of the therapeutic measures described in the Nei Ching, but are more complicated.

In Chinese cultural history, Chiu Chang Suan Shu (Nine Chapters on the Mathematical Art 九章算術), the oldest classic of the Chinese mathematics, is believed to have been completed sometime prior to 179 A.D., because its full title first appears in the inscriptions on two bronze standard measures dated 179 A.D. The bronze inscriptions indicate that the work of Chiu Chang was written during the former Han dynasty in the first century A.D. [109] The appearance of the Chiu Chang Suan Shu may be a distinctive accomplishment in Chinese medicine because of its unique attitude towards the "Galenics". Arithmetical progress during the second century A.D., influenced both Galen and Chang Chung-ching independently. A value system involving magnitude had been introduced formally into medicine. Henceforth the emphasis in ancient medicine rested upon a value system in which magnitude dominated therapy and causal values were regulated.

Prior to the Han dynasty, the Nei Ching was entirely philosophical. With the advent of Chang Chung-ching, Chinese

108. ibid., p. 35

109. cf. Needham, vol. 3, chapter 19, pp. 24-33

medicine took a great step forward. Diseases were studied from a clinical standpoint, emphasizing physical signs, the method of treatment and the action of drugs, rather than on the theories of disease as in former times. This is probably why the Chinese people regarded Chang Chung-ching as the Chinese Hippocrates. After Chang Chung-ching's death, scientific medicine may be said to have degenerated into dogmatic formalis. No later writing of any value or originality appeared until the Ming dynasty (1368-1644 A.D.) when the Jesuit missionaries first arrived in Macao in 1557.[110]

It is not possible to disregard entirely medical development from the time of Chang Chung-ching (142-220 A.D.) until the 15th century A.D., since there are a number of important writers whose views are helpful in understanding the earlier period. Wang Shu-ho (王叔和 210-285 A.D.) was in a better position to secure Chang Chung-ching's material in editing the Shang Han Lun (Essay on Typhoid); Huang-Fu Mi (皇甫謐 215-286 A.D.), the author of Chia I Ching (甲乙經) in his work on acupuncture provides us with some conception of the changing pattern; Tao Hung-ching (陶弘景 452-536 A.D.), an authority on materia medica exemplifies the continuance of an empirical tradition; Sun Szu-miao (孫思邈 590-682 A.D.) the compiler of the

110. ibid., vol. 1, pp. 148-149; Kenneth S. Latourette of Yale University states that: "a rumour that Khubilai had been baptized led the Pope in 1278 to start a group of five Franciscans toward China." According to Latourette, the first Roman Catholic missionary to reach China was John of Montecorvino, a Franciscan. (Latourette, Kenneth S., The Thousand Years of Uncertainty, Eyre & Spottiswoode, London, 1938, p. 332)

compiler of the Chien Chin Fang (Thousand Gold Remedies 千金方), and Wang Wei-I (王惟一 about 1026 A.D.), a great acupuncturist, constitute exemp ars of good practitioners. However, their writings exhibit no comprehension extending beyond Chang Chung-ching's Shang Han Lun and the Nei Ching. In other words, they were frequently confused between causal and magnitude value judgements. In the sixteenth century A.D. European scientific knowledge was introduced to China and stimulated a reationary value in the study and deeper exploration of the Nei Ching.

It is important to recognize that Chang Chung-ching was born in Nan-yang (南陽) which is a village near the River Lo. It may not be wrong to say that the observational period of ancient medicine closed with Chang Chung-ching. His comprehensive elaboration of the Nei Ching was incidentally due to the severity of the epidemics occurring in his village. Since seventy percent of the deaths were due to typhoid, he was stimulated to seek a deeper understanding of the disease from the medical classics as well as from his clinical experience. Although his book Shang Han Lun is devoted primarily to typhoid fever as well as other miscellaneous diseases, he sought to elaborate his views by a closer interpretation of the Nei Ching. That is to say, Chang Chung-ching relied upon prior Chinese speculations of causal value and applied them in the interpretation of Chinese

realities, a methodological process which, in its parallelism, fully justifies the application of the soubriquet, the Chinese Hippocrates, to him.[111]

In Vesalius and Harvey: The Founding of Modern Anatomy and Physiology, Michael Foster said: "In this year 1543 the printing-press of J. Oporinus (or Herbst) in Basel gave to the world in a folio volume the Fabrica Humani Corporis, the structure of the human body, by Andreas Vesalius. This marked an epoch in the history of Anatomy, and so of Physiology and of Medicine."[112] Foster's"world" after Vesalius' time can surely include China, because during the reign of Emperor H'ang-hsi (1662-1722 A.D.) Anatomie Mandchoue, the European concept of human anatomy, was introduced to China.

It was said that the Emperor K'ang-hsi (1662-1722 A.D.) of the Ch'ing dynasty had read all sorts of studies, above all those on geometry and moral philosophy. Having contracted a dangerous illness, the continuation of those studies was defended before him by the physicians and he expressed then the desire to know the anatomy of man and the function of the different organs. The Jesuit missionaries then proceeded to make an anatomy founded upon the works of Duverney and of other French anatomists. Since they had shown the Emperor a portion of their work and a large number of figures with explanations pertaining to them, these gave him so much satisfaction that

111. Chen, Chan-yuen, History of Chinese Medical Science, Chinese Medical Institute, Hong Kong, 1969, pp. 40-43

112. Foster, Michael, "Vesalius and Harvey: The Founding of Modern Anatomy and Physiology", A Treasury of Science, Harper & Brothers, New York, 1958, p. 521

Anatomie Mandchoue (1694) fig. 1
Rare Book Collection
University of California, San Francisco

Anatomie Mandchoue (1694) fig. 55
Rare Book Collection
University of California, San Francisco

Giovanni Valverde: "Anatomia del Corpo Lumano"
(per Antonio Salamanca and Antonio Cafrery)
Rome, 1560

The second plate of the muscles from the second book of the De humani corporis fabrica by Andreas Vesalius (Oporicas) Basle, 1543

he ordered his royal painter to put all other work aside and to occupy himself exclusively with the painting of the anatomical figures. However, the work was not completed due to the departure of Bouvet in 1694.

B. Medicine and Culture

From the original folios, Anatomie Mandchoue, is in part copied from Giovanni Valverde's Anatomia del corpo Humano, such as figure 54 in Anatomie Mandchoue resembles exactly a figure from Tavola II. del Lib. II. 65, and which is in turn actually the second plate of the muscles from Andreas Vesalius' De humani corporis fabrica.[113] Although the original source was limited, Bouvet gives further information on the work with which he was charged by the Emperor, stating that it was only a translation into the Manchurian language of a complete anatomy and a comprehensive work on medicine. What is much to be regretted is that, in spite of Emperor K'ang-hsi's personal genius and enthusiasm for Western learning, he did not encourage among his people the study of science which at his time was almost monopolizing the best brains in Western countries.

In The Yellow Emperor's Classic of Internal Medicine, Veith points out that the Chinese concept of the structure of the human body is connected with Chinese theories of cosmogony. Chinese anatomical illustrations of the human anatomy are highly stylized and of little practical significance.

113. cf. Valverde, Giovanni, "Anatomia del corpo Humano" (per Antonio Salamanca and Antonio Cafrery), Rome 1560 and Andreas Vesalius De humani corporis fabrica (Oporicas), Basel 1543.

Veith states that: "It is difficult, if not impossible, to draw a dividing line betwee, the anatomical and physiological concepts of the Nei Ching."[114] However, Anatomie Mandchoue certainly stimulated Chinese medicine which now passed from the speculative phase of magnitude value to the revival phase of reactionary value.

It is worthy of mention at this point that although isolated from the Vesalian movement, the great herbalist Li Shih-chen (李時珍 1518-1593 A.D.), a native of Hu-pei province, traveled all over China to compose his Pen Tsou Kang Mu (descriptive catalogue of Chinese herbs 本草綱目)which is of great pharmaceutical value. His contribution was the greatest scientific achievement of the Ming dynasty. Li's work is deservedly regarded as a major achievement of Chinese medicine.[115]

As mentioned previously, Catholic missionaries began to reach China as soon as the sea route was made possible. Francis Xavier attempted to reach the mainland, but died in 1552 at Kuang-tung. From his time onwards, China has been visited by Roman Catholic missionaries constantly. Their scientific knowledge soon won them the favor of the Chinese. Two of the Jesuits became Presidents of the Board of Mathematics in Peking. However, the earliest available information on the influence of Western medicine reaches

114. Veith, p. 30

115. Wang and Wu, pp. 77-81, (chapter XVII, The Pen Tsao Kang Mu or the Great Herbal)

back to the time of the great missionary Matteo Ricci (1552-1610 A.D.), who arrived in Macao in 1580 A.D. He was the most significant figure in the development of cultural relations between China and the West.

In Science and Civilization in China, section 20, Joseph Needham discusses the Jesuits' intentions as follows:

> In their gentle way, the Jesuits were among the first to exercise this dominance, spiritual though in their case it was meant to be. To seek to accomplish their religious mission by bringing to China the best of Renaissance science was a highly enlightened proceeding, yet this science was for them only a means to an end.[116]

However, the Jesuits' intention that Renaissance natural science was primarily systematized knowledge, tended only to encourage a Chinese revival, so that, as Hu Shih says, Chinese science became mere book-learning, while Western natural science had begun to create a new world. Actually, during the Ming dynasty (1368-1644 A.D.), Chinese domestic history shows an increasing interest in the restoration of Chinese native culture. The great advance in scientific method during the same was primarily in phonetics and philology. In medicine, after the encyclopaedist Wang Ken-tang (王肯堂 1549-1613 A.D.), most medical writers were content with the study of the Nei Ching and the writing of commentaries or making annotations. In fact, the earliest edition of the Nei Ching, now preserved in the rare book

116. Needham, vol. 3, p. 449

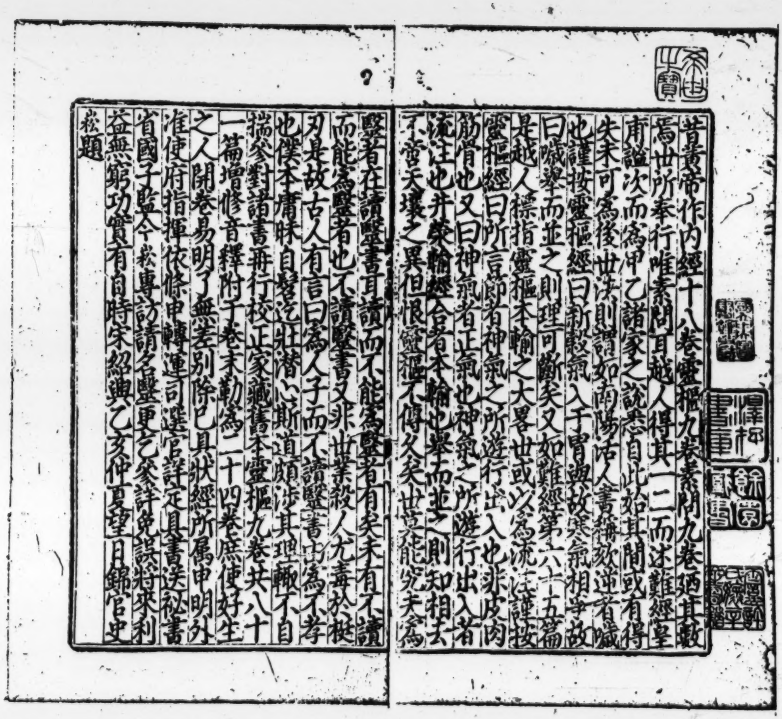
collection of the National Central Library, is the Ming edition of 1550 done when Li Shih-chen served as a Royal physician to the Ming Court, and two years prior to his writing the Pen Tsao Kang Mu.

The revival had value which can be best described as a revival phase of reactionary value. To speak of the revival phase of medicine, however, determining the meaning is rather important, since the use of the term "Renaissance" would be invalid as it is conceived as possessing a multiple meaning. In A Critique of the Biological Contributions of Leonardo da Vinci, John B. deC.M. Saunders points out that:

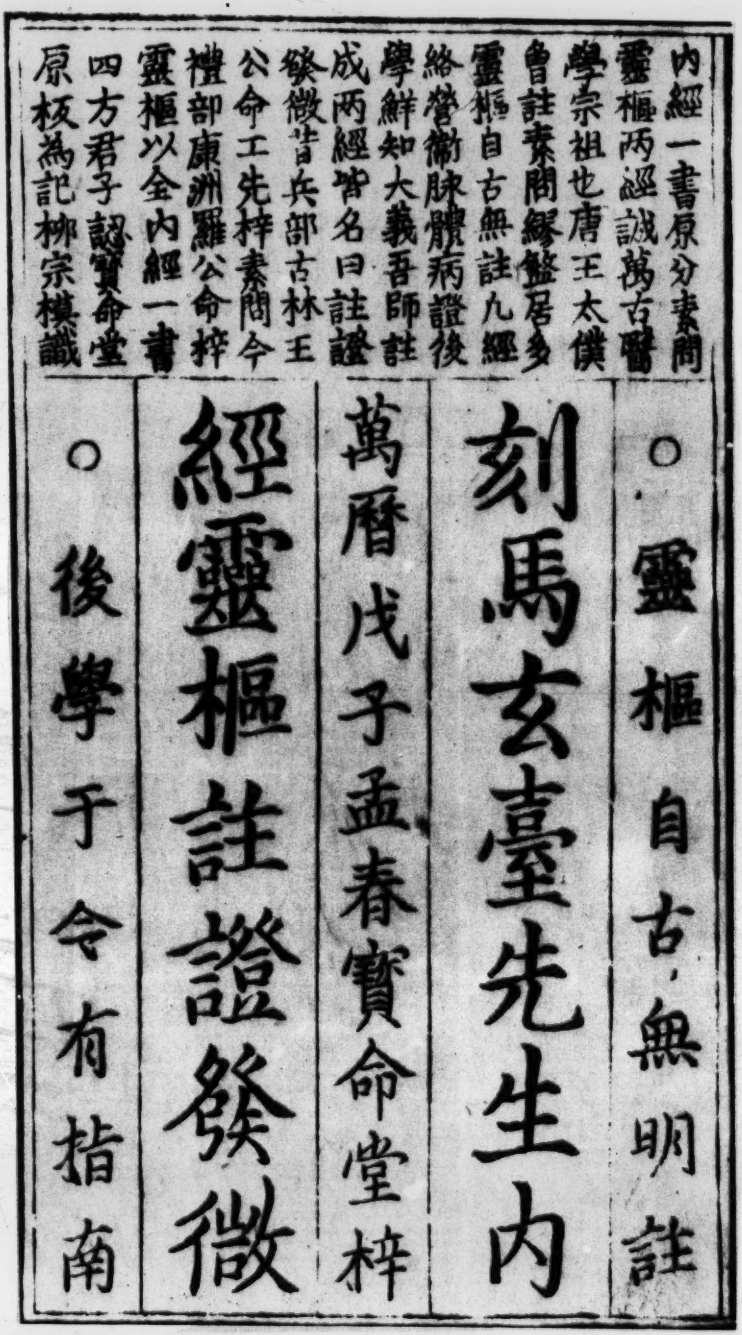
> It is dangerous, however, to accept Leonardo's illustrations at their face value. This has been responsible for the many false and spurious claims made on his behalf and which have tended to debase the rich metal of his genius. At all times careful examination of the accompanying notes and appreciation of contemporary thought are required for their interpretation. Likewise, it must be remembered that pen, pencil, and brush can distort to suit the purposes of an author. This was particularly true of Leonardo who, for lack of human bodies for dissection, was frequently compelled to resort to the butcher's shop for anatomical details which were then distorted to fit the human frame.[117]

This quotation implies that the term "Renaissance" is neither pseudomorphic nor formalistic, but is totally realistic. Saunders also mentions that Girolamo Cardano remarks in his De subtilitate that a painter is at once philosopher, architect, and dissector and, "for proof there is that remarkable imitation of the whole human body [I saw]

[117] Saunders, J.B. deC.M. A Critique of the Biological Contributions of Leonardo da Vinci, The Pacific Coast Oto-Ophthalmological Society, 1963, pp. 17-18



Ling Shu Ching, Ming edition
Rare Book Collection, National Central Library (1550)
Taipei, Taiwan, Republic of China



Huang Ti Nei Ching Ling Shu chu cheng fa wei (1768) by Ma Shih
Rare Book Collection, University of California, San Francisco

many years ago, by Leonardo da Vinci of Florence, which was almost complete; but the task required a great master and investigator of nature such as Vesalius." What did Vesalius do for the "Renaissance"? He ensured the success of the new method of observation and placed experience on the high path of inquiry. What we admire in the "Renaissance" is its spirit. A similar spirit also appeared in China about the same time. As A. W. Hummel says: "for Chinese literary scholarship of the beginning of the 17th century a systematic application of the inductive method is a use of the very terminology which we associate with that method in the West."[118] In Chinese medicine, after Li Shih-chen and Wang Ken-tang, the development of a body of knowledge from the study of the strict meaning of the Nei Ching became almost exclusively a spiritual endeavor. More commentaries and annotations on the Nei Ching were published during the reign of the Emperor Wan-li (萬曆 1573 - 1619 A.D.) than at any other time. With the revival spirit, most great physicians, such as Wu-You-Ko (吳又可 1592-1672 A.D.), who discovered that certain diseases are infectious in nature and that natural air is the medium. Fu Ching-chu (傅青主 1607-1684 A.D.), a great gynaecologist, Yeh Tien-shih (葉天士 1667-1746 A.D.), a successful clinician with tremendous critical cases, and Hsueh Shen-pai (薛生白 1681-1770 A.D.) all exhibited

118. Hummel A.W., "Phoentics and the Scientific Method", ARLC/DO, 1940, p. 146

a skill in treating the infectious diseases and were no longer content with the dogmatic study of the Nei Ching but began to explore the Nei Ching with originality and with innovations and new perspectives. Thus the bronze model of acupuncture with Ching-lo (meridian points or conduits system 經絡) which is now preserved at the Imperial Palace Museum, was also built during the reign of the Emperor Wan-li about 1601 A.D. and was followed by A Complete Treatise of Acupuncture of Yang Chi-chou (楊繼洲 ca. 1601 A.D.), Royal physician to the Emperor Ming Shen Tsung (明神宗 1573-1619 A.D.)

Speaking of acupuncture, in her review of Paul Unschuld's Pen-Ts'ao: 2000 Jahre traditionelles pharmazeutische Literatur Chinas, Ilza Veith declares:

> With the recent vogue of interest in Chinese medicine, as it has been evinced by the Western World, the mistaken impression has been evoked by many of the China visitors and observers that Chinese medicine and acupuncture are synonymous. Actually acupunture is just one facet of Chinese medicine, while another major aspect is nutrition and pharmacology.[119]

Veith, the first translator of The Yellow Emperor's Classic of Internal Medicine into the English language, in clarifying such a mistaken impression makes an important contribution especially in emphasizing that acupuncture is just one facet of Chinese medicine, and by explicitly saying that there are many other aspects of Chinese medicine frequently neglected in modern writings. In fact, Chinese medicine consists of an

119. Sudhoffs Archiv., Band 59, Heft 4 (1975), pp. 436-437

extraordinary range of the healing art much of which awaits a "natrual" metalanguage in order to transpose into the English language the various symbolic systems and different expressions in some meaningful way to the Western reader is a problem of great difficulty.

However, this dissertation is confined to the Nei Ching, the earliest medical corpus of ancient China. In medical axiology, it is in the cognitive phase of causal value. After the sixteenth century A.D., the Chinese medicine evolved from the speculative phase of magnitude value to the revival phase of reactionary value. The Nei Ching had become "classical learning" and its revival phase was now reactionary in nature, because of the perspective innovations introduced by the revival scholars.

Li Shih-chen, who can be compared to Andreas Vesalius, established a landmark in Chinese medicine through his clinical experiences and experience in the qualities of remedies and so provided a firm foundation for Chinese medicine. Wang Ken-tang, a friend of Matteo Ricci, as confused a figure as Paracelsus, revised many previous medical writings and edited an encyclopedia of medicine. His synthetic idea seems to have been inspire by the Chinese encyclopaedic movement of the Yung-Lo Ta Tien (永樂大典) which had been commissioned in 1403 A.D. With the intellectual revival, controversial ideas on the Nei Ching arose.[120] For example

120. Needham, vol. 3, p. 18

Wu You-ko argues against the traditional theory on the agents of disease and propounds his own theory on his work "On Plague". Although Wu still bases his views on the traditional concept of ch'i (pneuma 氣) and the speculations of the Ling Shu Ching (see Translations One and Two), his interpretation expressed in "On Plague" is only remotely related to that of the Nei Ching. In Wu's view, ch'i (氣) refers more to the sense of therapeutics than in the connotation of the Nei Ching.[121]

Although Fu Ching-chu was a great medical practitioner, particularly a gynaecologist, owing to a political entanglement with the Ch'ing (Manchu) in their invasion of 1644 A.D., he was forced to become a reactionary. He contributed little to Chinese medicine, although he was a scholarly physician (儒醫). Yeh Tien-shi was probably the best known clinician during the early Ch'ing dynasty and flourished during the reigns of Emperor K'ang-hsi (康熙 1662-1722 A.D.) and the Emperor Yung-cheng (雍正 1723-1736 A.D.), and he died in 1746 during the reign of the Emperor Chien-lung (乾隆 1736-1796 A.D.). Yeh Tien-shi was not only a fine clinician but also deduced from the Nei Ching a clinicopathology which gave emphasis to the nutritive energies (see Translations Three and Four) in treatment. His clinical practice was more advanced than that of the Nei Ching. Incidentally, Anatomie

121. Wang and Wu, p. 82

Mandchoue was introduced to China in 1675 and may have influenced his medical system.

Among Chinese practitioners, Wang Ch'ing-jen (王清任 1768-1831 A.D.) is said to have been acquainted with European concepts of anatomy having practiced in the Ch'ing capital of Peking for many years. He insisted that anatomy is essential for the understanding of human physiology. He also discovered that many of the physiological descriptions in the text books are incorrect. He wrote a remarkable little book called I-ling Kai-tso (Corrections in Medical Concepts 醫林改錯) but, according to Wang and Wu "many of the corrections are more erroneous than the original. Moreover, the book, though not of much scientific value, shows the rare courage, originality, observation and research spirit of the author--traits which practically absent in Chinese writings."[122]

Perhaps the end of the revival phase occurs with Wang Ching-jen. He was the most interesting figure among his contemporaries. However, one of his contemporary's Chen Hsiu-yuan (陳修園 1752-1823 A.D.) was also of great importance, because he led a great revival in Chinese medicine. Chen was a prolific writer and edited many popular works which were widely read both by professionals and layment. Among his many works, King Shu Chieh Yao Ch'ien Chu (Commentaries on the summarized Ling Shu and Su Wen 靈素節要淺註),

122. Wang and Wu, p. 82

Pen Ts'ao Ching (The Great Herbs 本草經), and Shang Han Lun Chien chu (Commentary on the Essay on Typhoid fever 傷寒論淺註) were meaningful examples of the revival period. Chen tragically died of cancer in 1823.[123]

In LingShu Ching, chapter 81: "On Tumors 癰疽", the last chapter ends with "cancer" which resembles the hexagrammatic arrangement of the Book of Changes (易經). At its close, the Book of Changes leaves the situation open for new beginnings and new formations calling the last hexagram "Before Completion" as awaiting a "breakthrough" or "strong turns".

Carl G. Jung once remarked in his foreword to Richard Wilhelm's edition of The I Ching or Book of Changes as follows:

> In view of the I Ching's extreme age and its Chinese origin, I cannot consider its archaic, symbolic, and flowery language abnormal. On the contrary, I should have had to congratulate this hypothetical person on the extent of his insight into my unexpressed state of doubt. On the other hand, any person of clever and versatile mind can turn the whole thing around and show how I have projected my subjective contents into the symbolism of the hexagrams. Such a critique, though catastrophic from the standpoint of Western rationality, does no harm to the function of the I Ching. On the contrary, the Chinese sage would similing tell me: "Don't you see how useful the I Ching is in making you project your hitherto unrealized thoughts into its abstruse symbolism? You could have written your foreword without ever realizing what an avalanche of misunderstanding might be released by it.[124]

It seems to be true that theoretical considerations of cause and effect often look to the practical results of chance; but

123. cf. Chen, C.Y., pp. 104-105

124. Wilhelm, pp. xxxviii-xxxix

the jumble of natural laws constituting empirical reality holds more significance than the causal explanation of events. The ancient Chinese were, however, exclusively preoccupied with the chance aspect of events and insisted that causal explanation can be subjectively experimented. The ancient Chinese mind may not seem to be scientific, but the probability of events is surely rational. The rationality of mind is the prime for "harmony" which is, in fact, the spirit of Chinese medicine. Carl G. Jung's remarks on The I Ching are undoubtedly subject to the probability of events which provides intellectual insight to the Chinese medical attitude.

It is commonly recognized that the laws of probability have general applicability. This statement has great relevance in any consideration of the intellectual level achieved in cultures undergoing a parallel development. The position of China was unique in its almost total isolation when compared with the evolution of the corresponding river valley cultures of antiquity. It is, perhaps, not surprising to find that while the Pythagorean school with its interest in numbers flourished in ancient Greece, scholars and diviners of China were similarly developing the I Ching or Book of Changes as a universal respository of concepts which included tables of antinomies (yin and yang) and a cosmic numerology.[125]

125. cf. Needham, vol. 1. p. 228

In discussing the Scientific Origins of the Protoplasm Problem in a re-examination of the relations between the concept of life and the doctrine of matter in pre-Socratic Greek science, Thomas S. Hall points out that, in the early ideas concerning protoplasm, the intermixing principle acts according to chance is apparently free from psychic attributes, since the organism itself is a product of the way in which intermixing occurs. In comparison between the pre-Socratic Greek science and the modern interpretation of life, Hall says in his summary:

> The chief differences between ancient and modern approaches to the problem are: the complete absence from ancient thought of a concept of life as the intimate activity of the common material substrata of all living things, and the absence from modern thought of the view of life as inherent in, or identical with, any material element of the system as a whole.[126]

However, the "a prior" imporbability of ideas may be limited by specific ethnic characteristics. "Chinese science" as Needham says "for two millennia before the coming of the Jesuits, and in spite of opportunities of intellectual intercourse greater than has often been pictured, had very little in common with that of the West".[127] Chinese medicine seems to have gone on its way largely independent of outside or any other influence, probably due to its unique characteristic of "harmonic principle" which had constantly preoccupied Chinese thought and speculation since the time of the Nei Ching.

126. Hall, Thomas S., "Scientific Origins of the Protoplasm Problem", Roots of Scientific Thought, ed. Wiener & Noland, Basic Books, New York, 1957, p. 56

127. Needham, vol. 1, p. 239

The "harmonic principle" differed markedly from the intermixing principle, largely because the ancient Chinese considered that the component organisms making up the universal organism followed their Tao, that is, their own nature. However, the "harmonic principle" may be considered to be similar in some respects to the humoral doctrine, since both followed in principle the same logic.

The "harmonic principle" is characteristically a by-product of the I Ching which developed sometime during the sixth century B.C., or even earlier than sixth century B.C. Etymologically, the ancient symbol I () is an ideographic symbol from a drawing of a tropical lizard, the chameleon, which can change the color of its skin under the influence of the environment. The meaning is derived from "color-changes" to designate "changeability" in a given entity under certain circumstances. Thus, I () in its later configuration implicitly means "transformation" of an entity, and "transformation" is theoretically related to the organismic view of both biological formulations and physical nature in a phenomenological world.[128] The description of the designator "transformation" must then satisfy the unique condition of its truth-value; namely in form but not in value. One could say the I Ching is not only a book of "changes", but a book of "unchanged-changes" which underlie the harmonic principle as the foundation of Chinese correlative thinking.

128. cf. Needham, vol. 2, p. 221

As previously noted, the terms yin and yang were evolved from the experience of the peasantry with natural phenomena affecting agricultural production. The terms were quite essential to symbolic dennotation. However, due to social evolution and complexity, these terms were gradually transformed from their original meaning to be applied in a speculative and abstract sense. In the I Ching's great appendix, yin and yang have already evolved into philosophical terms as expressed in the phrase "One yin and One yang are called Tao" (一陰一陽之謂道) which emphasizes the nature of the dualistic forces regulating the universe. However, Lao-tzu (老子), the natural philosopher, makes an interesting statement on the relations between the yin and the yang. He says in the Tao Te Ching: "living creatures are said to be surrounded by yin and to envelop yang, and the harmony of their life processes depends upon a harmony of these two ch'i". The verbal expression "envelop" in relation to the yin and the yang is an image symbolizing that dualistic forces are not distinctively opposed to each other, on the contrary, they are harmoniously "enveloped" by one another. This constitutes as cognitive phase, in the causal values, of the yin and the yang.

The yin and the yang, during the first century B.C., were conceived as polar correlates in the natural world by a natural philosopher, Tung Chung-shu (179-104 B.C.). Tung thought that

"the constant course of Nature is that things in opposition to each other cannot both arise simultaneously. The yin and the yang move parallel to each other, but no along the same road; they meet one another, and each in turn operates as the controller".[129] For Tung's concept of Nature, Needham comments:

> .....the characteristic Chinese conception of causality in the world of Nature was something like that which the comparative physiologist has to form when he sturies the nerve-net of coelenterates, or what has been called the 'endocrine orchestra' of mammals. In these phenomena it is not very easy to find out which element is taking the lead at any given time. The image of an orchestra evokes that of a conductor, but we still have no idea what the 'conductor' of the synergistic operations of the endocrine glands in the higher vertebrates may be.[130]

In fact, as Needham's comment, the universe in Tung's concept is a vast organism with all its parts cooperating in mutual service which is perfect freedom. This is the speculative phase, in the magnitude-value, formulating the yin-yang principle

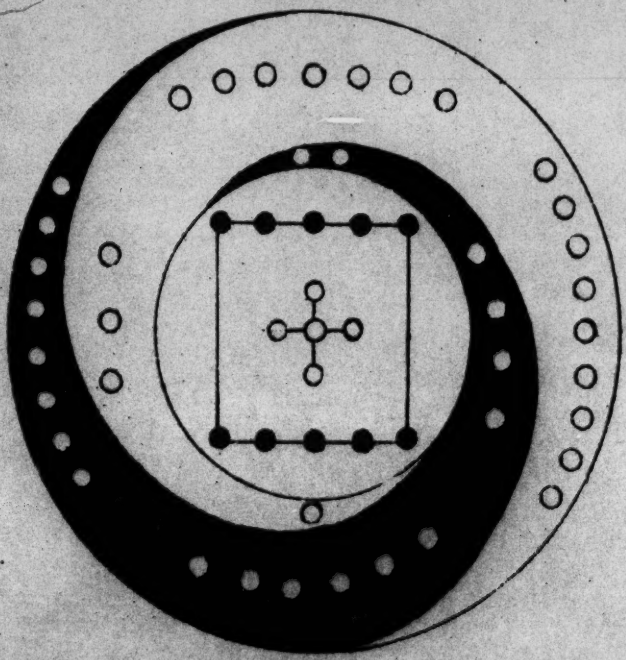
Theoretically, the yin-yang principle is the ultimate or final principle in the ancient Chinese speculation. However, there is a great deal more to the conceptual base of the five elements which must be discussed in connection with the yin-yang principle in order to explain the medical evolution, particularly for magnitude-value systems. Therefore, it is proper to analyze the five elements before discussing the revival phase, in reactionary value, of the yin-yang principle.

It is plausible to assume that the five elements developed

129. ibid., p. 288

130. ibid., p. 289

太極河圖



雖曰一六在下二七在上其實皆陽上而陰下雖曰三八在左四九在右其實皆陰左而陽右雖曰以五生數統五成數其實皆生數在內而成數在外雖曰陰陽皆自內達外其實陽奇一三七九陰耦二四六八皆自微而漸盛彼欲分裂某幾點置之某處而更亂之蓋即此太極河圖觀之哉但陰陽左右雖旋轉無定在也而拘拘執河圖虛中五十無位之說是又不知陰陽合於中心而土本天地之中氣也太極河圖說

The earliest phase of the yin-yang composition

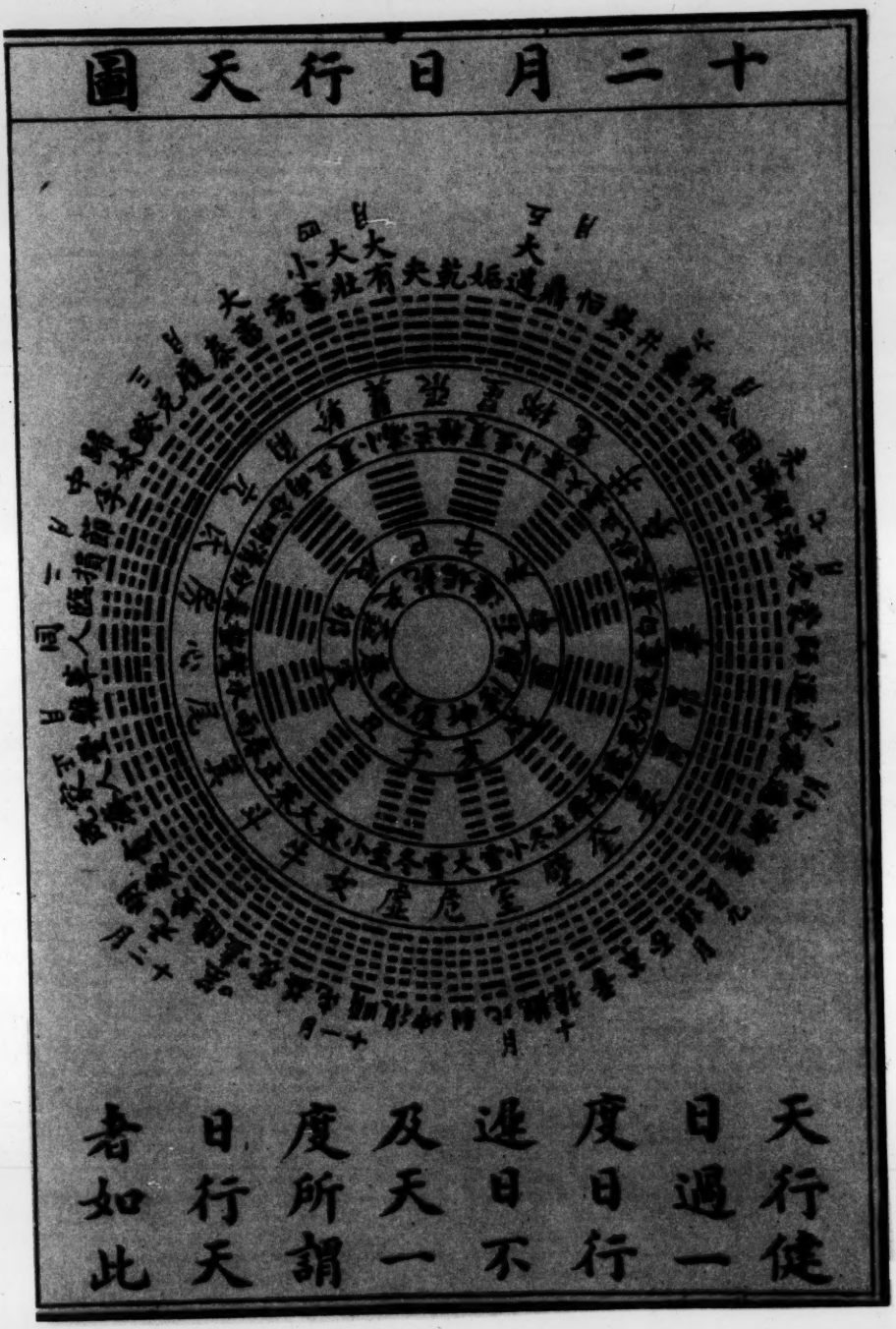


Diagram of the ancient Chinese divisions of the equator
(hour-angle segments)

approximately during the late Western Chou dynasty (1030-722 B.C.) when mathematical conceptions were formalized. The "Writing from the River Lo" is a mathematical notion which developed during the Chou dynasty and in it the central "five" acted as an axis which controlled the other numbers. However, from the internal evidence, Shu Ching (The Classic of History 書經) can be ascribed to the early centuries of the first millennium B.C. It is recorded that Hung Fan Chiu Ch'ou (The Ninefold Great Plan 洪範九疇) begins with the doctrine of the five elements.[131] The conception of the elements characteristically avoided substance but emphasized relations. It consisted of:

Water	soaking, dripping, descending	liquidity, fluidity solution	saltiness
Fire	heating, burning ascending	heat, combustion	bitterness
Wood	cutting & carving instruments	solidity involving workability	sourness
Earth	producing edible vegetation	nutrivity	sweetness
Metal	capacity of changing form by re-melting and re-molding	moldability	acridity

The five "elements" were actually five powerful forces in ever-flowing motion of fundamental substances. They were undboutedly recognized during the daily work experience of the peasants in the natural surroundings of an agricultural society.[132]

131. Hung Fan Wu Hsiang Chuan (Discourse on the Hung Fan chapter of the Shu Ching in relation to the five elements)

132. cf. Needham, vol. 2, p. 243

It is doubtful whether we can trust the date of the Shu Ching as being from the early centuries of the first millennium B.C. It is more reasonable to believe that the Shu Ching, as well as the I Ching, was compiled approximately around the sixth century B.C., or a little earlier, and the evidence is strong that its basic theory was well-organized during the Ch'un Chiu period (722-480 B.C.). The peasant experience in recognizing the yin and the yang, as previously indicated, has a great deal to do with human perception of natural phenomena of the physical world in the effective production of agricultural products. The recognition in the daily working experience of the peasantry is related to bodily movement and the recognition that its maintenance depends upon human energies. Alternatively, the yin and the yang is concerned with the physical nature whereas the [five] elements are related to human nature. In the cognitive phase, the two types of natures may be regarded as causal agents of diseases, since the physical natures are conceived of as depending upon the status of unchanged-changing phenomena which provide environmental conditions; and human nature positively originates from the functioning of a vital organism. These concepts are fully reflected in the Ling Shu Ching as found in chapter 46: on the five perceptible changes, and in chapter 56: on the five taste and human organs. (see Translation One and Translation Four).

In Shu Ching, wu hsing 五行 means the five actions or five behaviors, since hsing, 行, etymologically originates from "the moving parts of mechanism". The ancient Chinese were very carefuly in establishing "relations" between the correspondences, so that "elements" were regarded as being more closely concerned wtih the state-description. Thus, water, fire, wood, earth, and metal were recognized as "elements" from the essential meaning of "action". It was not until the later part of the Western Han dynasty (202 B.C. - 9 A.D.) or the early part of the Eastern Han dynasty (25-220 A.D.), that the five-elements idea was established as a complex theory enumerating orders and making symbolic correlations with mutual correspondences. Consequently the Principle of Control (hsiang chih, 相制) and the Principle of Masking (hsiang hua, 相化) are applicable to many fields of experimental science and notably to the field of medicine. In the speculative phase of Chinese medicine, which was primarily based upon the yin-yang composition and the mutual correspondences among the five elements, the thinkers were in general all essentially concerned with the value of magnitude.

By "magnitude", we primarily mean measurable quantity as in size, area, or volume. Shang Han Lun (Treatise on Typhoid, 傷寒論), Chang Chung-ching similarly is concerned more with clinical measurement as its concept of the "physio-conduits"

(經 水) discussed in the Part Three of this dissertation, "bauses and symptoms" (本 標) of the Nei Ching Su Wen chapter 65; "interactions" (相制 交感) translated in The Yellow Emperor's Classic of Internal Medicine (pp. 115-125) and the "therapeutics" (仲景 治法) as recorded in many later commentaries about Chang Chung-ching. In each of these it is proposed to settle questions on the clinical criteria to be employed in the treatment of epidemic typhoid.[133]

It should be noticed that Chang Chung-ching's achievement was undoubtedly established by his comprehensive understanding of the Nei Ching, and his clinical observations. However, in his Shang Han Lun, he only quotes his own interpretation of the Nei Ching or to throw light upon the interpretation of obscure passages; for instance, on the concept of "physio-conduits" (經 水) which still exist in the text of the Ling Shu Ching. In this text, twelve "physio-conduits" systems (十二 經脈) are described, but Chang Chung-ching limits himself to only six of them. Although there are many commentaries which discuss why Chang Chung-ching only used six ching-mo (經脈), they are not convincing. Indeed, whether later writers understood the original meaning of the Ling Shu Ching is a subject which remains to be challenged.

It should be recognized from the Ling Shu Ching, chapter

133. cf. Ling Shu Ching Pai Hau Chieh (靈樞經白話解), Hong Kong, pp. 155-162

12, that the Yellow Emperor begins his question on the correspondences between the twelve "physio-conduits" system (十二經脈) to the twelve main rivers of ancient China. He even draws comparisons between the length, depth, breadth and narrowness of the rivers to the twelve "physio-conduit" systems (十二經脈) of man. Clearly the underlying thought is on the relationship of the microcosm to the macrocosm. However, later commentators have transposed the original concept to give it a more mystical meaning. This can be easily verified by an examination of Chang Chung-ching's own treatise on typhoid.

It is known that during the time of Chang Chung-ching, Ching-chow (荊州), one of the nine great state of ancient China, experienced an epidemic of typhoid. According to Erh-ya (爾雅), Ching-chow geographically includes Ho-nan (河南), Hu-pei (湖北), Hu-nan (湖南), Kuei-chow (貴州), Szu-chuan (四川), Kuang-tung (廣東), and Kuang-hsi (廣西) provinces. In the region of Ching-chow, there are many rivulets, but the main rivers are the River Ju (汝水), River Chang (漳水), River Hu (湖水), River Wei (渭水), River Chi (濟水), and River Sh'eng (澠水) that is six in all. It is thus reasonable to suppose that Chang Chung-ching practiced medicine within the region of Ching-chow making his comparisons with its rivers

system. It is also possible that he recognized epidemic typhoid as a disease conveyed by polluted water of the populated river valleys.[134]

Chang Chung-ching's clinical method, as he expressed it in the Shang Han Lun, was the first to determine the cause from the physical signs, and the patient's condition, and then to initiate treatment from the findings. It is curious that he should describe the symptoms as being different in the different river valleys. Chang Chung-ching also employs remedies depending entirely upon locally, not generally, produced products. For example, on examining a patient suffering from fever, bone-ache, sever dampness, and vomiting, (symptoms of of a type of typhoid which mostly occurred in the valleys of the River Ju in Ho-nan province) Chang prescribed remedies which always included "dates" (棗子), because "dates" are largely produced in northeastern China. "Dates" are said to be easily assimilated by the patient. However, when the patient also suffers from jaundice and the hands are warm (symptoms of a type of typhoid which occurs chiefly in the valleys of the River Hu near the Yang-tzu river), Change prescribes remedies without "dates" which are replaced by "rhubarb" (大黃), a product largely produced in northwestern China, which is easy to purchase at most of the river ports on the River Hu near its confluence with the River Chiang (江水)

134. Erh-ya (爾雅)

which originates in Ch'ing-hai (青海).[135] Furthermore, the course of this river and its geography also confirms the assumption, for the River Chiang is the longerst river, and originates from the south side of the Bayen Kara mountains, flows through the Yun-nan high plateau down through Sze-chuan, Hu-pei, Hu-nan, Chiang-hsi, An-hui, all the way on the sunlight side and then enters the ocean. In the identification of the River Chiang, "sunlight" is more than an adequate description. On the other hand, the course of the River Wei, begins in the Wei-yuan (渭源) district, flows eastward through Feng-sang (鳳翔) to Tung-kuan (潼關), and joins the Yellow river, that is to say, in geographical terms, it flows from a high mountain to the plain before joining the Yellow River, through the only passage between the mountains. Hence the course of the river is along the lesser yang side and is analogous with the side of the diaphragm of the human body. These geographical details illustrate how measurable quantities and magnitude are expressed through their symbolic correlations and by mutual correspondences among the five elements. This method of expression was given great impetus during the first century B.C., transferring many ordinary facts into their corresponding symbols. The cognitive phase, with its value-judgement, could not be maintained owing to the inadequacy of the observable knowledge based upon sense

135. Chuang Chung-ching's Prescriptions (張仲景方)

perception. Likewise in Chinese medicine, as can be observed from later medical writings, most medical writers dervied their notions and modes of expression from Chang Chung-ching. It seems most likely that the interpretations of the Nei Ching are reduced from Chang Chung-ching's Shang Han Lun and the cultural technique of expressing magnitude-value. However, Cahng Chung-ching's great achievement was in the therapeutics of epidemic typhoid and his work was one of the remarkable foundation stones of Chinese medicine. Chinese medicine, after Chang Chung-ching, passed into a more complex and complicated stage which may be called "a speculative phase".

The concept of yin yang, and elements were theorized as yin-yang composition and the five elements theory which was considered as comprising natural philosophy. After the Han dynasty (25-220 A.D.) and for more than 1000 years, there seemed to be no philosophers who concerned themselves with natural philosophy. The pseudo-sciences and Sung Neo-Confucianism were too far removed from medical sciences to play a significant role. Not until Wang Ch'uan-shan (王船山 1619-1692 A.D.) did natural philosophy reaffirm itself as part of Chinese cultural history. Wang Ch'uan-shan was an excellent scholar of the late Ming dynasty, who had once met the Italian Jesuit Matteo Ricci. He was reluctant to accept the theories of a cosmological cycle as developed by the Neo-Confucian scholars, and indeed rejected all such cosmogonic speculations.

His most interesting contribution was his recognition of the five-element theory and he agreed that the five elements are merely the basic substance of all physical form, and that such forms were conceived as consisting of unchangeable substance, although they change constantly as soon as they are established in physical form. His natural philosophy is known as the "Theory of the Generative Power of Nature" (絪縕生化論). Wang thought was recognized accidentally to become a primary force in the re-discovery of Han thought by the "Yen-Li school" (顏李學派 by Yen Yüan (顏元 1635-1704 A.D.) and Li Kung (李塨 1659-1733 A.D.) Undoubtedly, the Yen-Li school was a revival which sought to re-establish Chinese classicism.

Yen Yüan decided that the ancient method of learning was more practical. Stimulated by the Jesuits, in 1694 Yen was given charge of the Chang Nan Shu Yüan (漳南書院), a new type of school concerned with practical subjects, such as mathematics, astronomy, geography, architecture, agriculture, applied chemistry and pyrotechnics.[136] Yen's school was however suddenly destroyed by a severe flood in 1703, one year before his death. Nonetheless the Chang Nan Shu Yuan was the first school in the history of Chinese education to utilize European scientific disciplines but the school was also fostered by Chinese humanism.

136. cf. Needham, vol. 2, pp. 211-215

In Chinese medicine, Li Shih-chen (1518-1593 A.D.), the great Chinese herbalist, was the most important figure in the transition from rationalism to experimentalism. He not only spent his life on the study of materia medica, but also instructed patients to adopt a realistic attitude towards medicine which was to cast a new light on Chinese medicine. Unfortunately, the Manchurian invasion of 1644 by a foreign culture overturned the Chinese renaissance, and force the Chinese humanistic movement into book-learning alone throughout the Ch'ing dynasty (1644-1911 A.D.). Although the Manchurian emperors, for political purposes, encouraged scholars to undertake scientific studies, most were content with book-learning in an attempt to avoid the dangers of political intrigue. The Emperor K'ang-hsi (1662-1722 A.D.), appointed Jesuits to his Board of Mathematics and Astronomy (欽天監). He learned and became expert in Latin and mathematics. Unfortunately, he allowed no one else the opportunity of studying under the Jesuits. The Anatomie Mandchoue, the illustrations of which are explained in the Manchurian language had a very limited circulation. The political situation during the Ch'ing dynasty was such as to limit the humanistic movement to book-learning, so that unlike the European Renaissance, the new stimulus was still-born.

The attitude towards "book-learning" actually began

during the reign of the Emperor Shen-tsung (神宗 1573-1619 A.D.) of the late Ming dynasty, because of his eunuchs' flattery. "To close the door and protect oneself" became the fashionable attitude. The earliest commentary on the Nei Ching is the Huang Ti Nei Ching Su Wen Ling Shu Ho Ts'uan (黃帝內經素問靈樞合纂) by Ma Yüan-tai (馬元臺 ca. 1588).

Although "book-learning" arose as a sort of passive resistance to the political situation, scholars were in fact eager in the pursuit of their own studies. There was no expansion of formalistic jargon, but a new realistic point of view. For example, in Ma Yüan-tai's commentary, he points out the original phase as what I called "cognitive phase" of the Nei Ching and blames later writers who concentrated on Chang Chung-ching's Shang Han Lun or Huang-fu Mi's Chia I Ching, and Sun Szu-miao's Chien Chin Fang, without any intention of learning something of the original text of the Nei Ching. In the later commentaries on the Nei Ching, there were also sensible explanations which countered the Neo-Confucian jargon or Chinese idealism.

The revival of the Nei Ching can be positively identified as an ontogentic configuration of ancient Chinese intellectualism and not merely an inheritance from classical times but an axiomatic speculation on human health based upon deductive reasoning. However, this statement must not be understood as

providing a rational account of the structure of nature not an empirical analysis of nature, because it is in reality a hypothesis accepted by the Chinese literati rather than by physicians and handed down as common sense where it crystallized and became accepted belief. In fact, the inquiry into the Nei Ching is nothing else than its use as a source for the deduction of fundamental propositions of axiomatic speculation concerning human health, characteristic of Chinese intellectualism. This is not at all to disregard procedural accessibility; on the contrary, it is even proclaimed that deductive reasoning from axiomatic speculation is a necessity.

Chinese medicine characteristically is an intellectual pursuit which could only be developed within the physical and geographical dimensions from the frontier of Manchuria to the Gulf of Tonkin and from the shores of the Pacific to the Pamir mountaing range in the west. A rather sinuous line follows the edge of the Mongolian plateau east of the big loop of the Yellow River which is the cultural region of the Chinese peasant society that developed to the east of the Himalayan and Tibetan mountain ranges. The greater part of north China consists of a vast alluvial plain built up by the Yellow River, characterized by high silt content, violent seasonal fluctuations in water volume and by recurrent and disastrous changes in the course of the river. The climate contrasts with the Siberian-Mongolian anticyclonic region and the tropical anticyclones of the Pacific

during the different seasons.[137] The climatic variations and the seasonal changes influenced the persistent stability of the Chinese people. The physical stress, and the necessity of adjusting to the environment was constantly apparent to the Chinese people. Adjustment was required to make a livable environment in order to resist physical stress. The basic criteria were the yin (shade 陰) and the yang (light, or rather sunlight 陽) which must be judged correctly to establish an acceptable livable environment. However, the yin and the yang were natural forces which owe nothing quantitatively to human beings, conversely, human beings ought to regulate the living conditions for comfort by their own effort. The natural value of the yin and the yang were applied only under such a circumstance. However, occasional tropical cyclones, and the procession of continental cyclonic storms could easily encroach upon the life of human beings who then suffer discomfort. Likewise, unsuitability of living conditions is another cause for discomfort. Thus, "harmony" with natural forces becomes the principal means of preventing discomfort. When the Chinese further recognized that natural forces consist of determining criteria of quality and quantity, the original meaning of the yin and the yang was transformed into a mystic notion rather than part of a technical terminology. In the Nei Ching, the concepts of the yin and the yang still remain

137. cf. Needham, vol. 3, pp. 462-463

in their technical sense, unlike later commentaries in which the yin and the yang are introduced into ontological or even mystical theories.

It has been recognized that human beings seeking nourishment are regarded as exhibiting human instinctive reactions. The ancient Chinese sought different substances from various sources but primarily along the Yellow River banks. However, the daily necessities, water, wood, fire, metal, earth, not only were frequently used substances, but their intrinsic values were judged from whether their functions were positive or negative toward each other. The "correlations" between basic substances were another principal notion employed for the prevention of discomfort, particularly in an active sense. The principles of control and changing appearance may be said to be the prototype of Chinese materia medica, and the Nei Ching has fully emphasized the correlations between the five elements.

What has been said so far would seem, in Hippocratic medicine, to constitute only a causal principle derived from the interaction of physical phenomena and human nature. However, from an analysis of the nine translations, it is apparent that the Nei Ching is also speculatively concerned with the human physiology, nutriment, prognosis and diagnosis. The last chapter on incurable "cancer" resembles the discussion

on the "harmonic principle" in the spirit of the Book of Changes (I-Ching) which implies that the possibilities of curing cancer awaits the future. The Book of Changes, however, requires deeper understanding and study in terms of its ontogentic configuration as an example of ancient Chinese intellectualism.

The Book of Changes needs to be interpreted and understood more realistically, since for the most part, it symbolizes the phenomenal changes in an agricultural society. For example, in the text of the Book of Changes, Hsü ()symbolized the natural necessity of farm products and represents the clouds in the heavens giving rain to refresh all that grows and to provide manking with food and drink. The rain will come in its own time. Watering is further suggested by the attributes of the symbols with the 'water' above and the 'heavens' below to designate a good season for the farmer with expectations of a good nourishing crop. However, the commentaries transcend the original meaning and remark that the Hsü hexagram "occupies the place of heaven and is central and correct in its behavior". Then its sequel implies that: "When things are still small, one must not leave them without nourishment, hence these follow the hexagram Hsü. Hsü means the way to"eating and drinking" but actually

signifies that nourishment depends on the heavens. The control of the rain itself does not lie within the power of man but nothing else.[138] Unfortunately, in later times, a transcendental meaning is applied to a purely symbolic sign.

Chinese intellectualism is for the mast part axiomatic speculation. A deep understanding of the process of Chinese intellectual insight is required to appreciate that a literary interpretation alone cannot serve in interpreting the extensions and elaboration of Chinese medicine. The Ling Shu Ching present many aspects which remain to be explored, and it cannot be viewed simply as a medical classic on acupuncture. Although the Ling Shu Ching mentions "Nine needles 九針十二原 ", it is primarily a continuation of the Su Wen. Indeed, the Nei Ching Su Wen provides us with more of the clinical theory associated with acupuncture than does the Ling Shu Ching. Hence to call the Ling Shu Ching "the oldest catalogue of acupuncture" rather than the Su Wen exhibits a superficial understanding of the two works. Furthermore, although the ancient Chinese were greatly concerned with preventive medicine, this is no reason to characterize all Chinese medicine as Yang-i (痒醫), i.e., preventive medicine.[139]

It may seem contradictory to caution the reader that the intellectualism of the ancient Chinese must not be understood

139. cf. Majno Culdo, The Healing Hand: Man and Wound in Ancient World, Harvard University Press, 1975, pp. 229-259

on methodological grounds while at the same time one attempts to establish a medical axiology which is in itself rationalistic. However, medical axiology is merely an evaluative method for determining the different phases of a topic in medical history. An axiological approach, however, assists one to recognize the changing cultural factors determining the stage of development at a given time. In view of the limitations of documentary evidence in Chinese medicine, medical axiology is valuable in the identification and evaluation of such material as it exists. It may be regarded as a method for the assessment of the internal evidence supplementing that external derived from the cited documents on Chinese medicine.

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